63-3-2

MODEL Minuteman

DOCUMENT NUMBER D2-5859, Volume II

SECTION OR ADDENDUM NO. .3

TITLE

The Wing III QPRI Supplement for WS-133A Minuteman Hardened and Dispersed.

NO. OF PAGES 146

DATE 20 March 1963

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The technical information contained herein has been coordinated with the System Functional Analysis of System Engineering.

for J. B. Marcella, Chief
System Functional Analysis

78100	2-5261	52133
WORK ORDER	UNIT NO.	ITEM NO.

Sub-section title page Documents

MODEL WS-133A DOCUMENT NO D2-5859 Volume II

TITLE The Wing III QPRI Supplement for WS-133A Minuteman H&D

REVISIONS				ADDITIONS			
PAGE	DATE	PAGE	DATE	PAGE	DATE	PAGE	DATE
				1-0.3	3/20/63		
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INTRODUCTION

The Wing III Supplement should be used with the Wing I QPRI and the Wing II Supplement. This supplement updates the Wing I document with the Wing II Supplement, to the Wing III configuration.

The major Wing III changes resulted from hardening and extending the survival period of the Launch Facility and the Launch Control Facility. An entirely new structure, the Launch Control Equipment Building, was constructed adjacent to the Capsule. It houses the equipment necessary to sustain the Capsule and the EWO capability for extended periods. Also, a hydraulic pusher was substituted for the gearcase motor. A list of Figure A changes with a brief explanation will be found on pages iii. 3 through xiv. 3.

Table i-1A. 3 (Volume I) and Table i-1B. 3 (Volume II) identify personnel by Air Force Specialty Code (AFSC) that are affected by equipment changes. The equipment is identified by Figure "A" number and name. The "Status" column of Table i-1A. 3 and Table i-1B. 3 show how the Duties and Tasks have changed, as follows: Changed means that Wing II Duties and Tasks been revised for Wing III. Added signifies that the Duties and Tasks are an addition to those for Wing II. Deleted shows that the Duties and Tasks are performed in Wing II but not in Wing III.

The "Page" column in Table i-1A. 3 and Table i-1B. 3 shows the page in the Wing I and Wing II QPRI affected by changes. The suffixes A. 3, B. 3, C. 3 . . . Z. 3 added to the page number show Wing III peculiarity, (. 3). The A. B. C. . . . Z. part of the suffix shows the sequential order in which pages should follow a particular page in the basic Wing I and II document. These added pages amplify existing pages or inject new material between existing pages.

> Editors Note: Whenever duty/task information has been changed or added for a given AFSC, new duty/task pages have been provided which replace or supplement pages issued previously. These new duty/task pages are listed in Table i-1B.3 to the right of the AFSC to which they apply. Whenever duty/task information has been deleted for a given AFSC, the word "Deleted" has been entered in the "Status" column and the page number on which the data is to be deleted is listed in the "Page" column of Table i-1B. 3. Because the deleted data is, in many instances, still applicable to earlier wings, and there may be other data on the page that is still current, it is suggested that a handwritten note be placed opposite the deleted data on the duty/task page to the effect that "Figure A XXXX (or Form B XX-XXXXX) duties and tasks deleted for Wing III and on."

The tables in the Supplement have the same basic numbering as corresponding tables in the Wing I document and the Wing II Supplement, but in addition, they have a .3 suffix. For example; Table 5-2. 2 is a Manning Summary for Wing II and Table 5-2. 3 is a Manning Summary for Wing III.

Tables i-1A. 2 or . 3, i-1B. 2 or . 3 and 5-2B. 2 or . 3 are in the Wing II and Wing III Supplements only. Table 5-2B. 3 shows the composition of Minuteman Mobile Maintenance Teams for Wing III. Charts 5-1. 3 and 5-2. 3 compare Wing I, II and III Team and Manning Summaries.

CAUTION

The QPRI and QPRI Supplements are planning documents and should not be considered as the final source of detailed procedural information.

The Technical Orders (T. O. 's) or T. O. Checklists are the official source of detailed information on the use and maintenance of Aero-Space Ground Equipment (AGE) and should be referred to for more complete and authoritative procedures.

To assist the reader in locating appropriate T. O. data, a matrix that cross references equipment FigureA numbers to T. O. numbers is provided as Appendix A-2, Volume II of Wing II Supplement to D2-5859.

NOTE

Maintenance operations for Real Property Installed Equipment (RPIE) are listed at the duty level only by direction from BSD.

REAL PROPERTY INSTALLED EQUIPMENT (RPIE) CHANGES

1. Figure A 1209.3 - Water Control and Removal System, LF

   a. Check valve added on the discharge line of the Sump Pump to prevent reverse flow.

2. Figure A 1210.3 - Sewage Disposal System, LCC

   a. Add automatic/manual valves on drain and vent lines penetrating the capsule.

   b. Add 2" floor drain in the LCEB.

   c. Add a 3500 gallon emergency sewage overflow tank located outside the Tunnel Junction and connected to the sewage sump.

   d. Revise the size of the sump pump in the Tunnel Junction.

*3. Figure A 1230.3 - Fuel System, LCSB

   a. This Figure A now furnishes fuel for the mobile standby generator (Figure A 1437.3) instead of the standby power source (Figure A 1323.3).

   b. Fuel quantity is now figured for a sixty day hot water supply instead of ten day for hot water and standby power.

   c. Delete above-ground day tank, transfer pumps and low-level alarm.

4. Figure A 1241.3 - Shock Attenuztion System, LCC

   a. Increase the number of air storage cylinders at each shock isolator from one to two.

*5. Figure A 1242.3 - Lift, Service, LCC

   a. Increase live load capacity from 2,000 to 6,000 pounds.

   b. Decrease operating speed from 50 to 25 fpm.

   c. Increase load equipment envelope from 30 x 42 x 68 to 58 wide x 114 long x 94 high.

*6. Figure A 1323.3 - Electrical System, LCC (Hard)

   a. Revise electric power ground.

   b. Revise telephone equipment ground.

* Indicates Figure A's included in Wing III QPRI Supplement.

6. Figure A 1323.3 - Electrical System, LCC (Hard) (Cont.)

c. Relocate standby engine-generator and transfer switch from LCSB to LCEB.

d. Change engine starting control from manual to automatic.

e. Change load transfer from manual to automatic.

f. Delete engine-shutdown for high lube oil temperature.

g. Add automatic engine exerciser.

h. Interlock engine operation with 36" Blast Valve operation.

i. Add power distribution within the LCEB.

j. Decrease standby generator capacity from 150 KW to 75 KW.

k. Decrease commercial power requirements from 225 kva to 130 KW with 85% PF.

l. Provide power for Blast Valve Control System, Figure A 1432.3.

7. Figure A 1324.3 - Water Supply System, LCC

a. Add shock attenuators on the water line at point of capsule penetration.

b. Add remote controlled (LCC Supervisory Panel) air-operated shutoff valve on water line at point of capsule penetration.

c. Add 3500 gallon water storage tank (TK-112) buried outside the LCEB for emergency usage. Add seven compressed air bottles and soleroid valve inside the LCEB to pressurize the tank during the survival period.

d. Add an emergency shutoff valve on the water line entering the LCEB. Valve is closed manually or mechanically by an upward movement of the floor.

e. The water treatment equipment is revised to meet conditions at the various sites.

f. Add a pipe with shutoff valve to supply raw water to the sewage lagoon. Note: AIO will maintain this system.

8. Figure A 1325.3 - Heating System, LCSB

a. Reduce boiler capacity to 250,000 btu/hr.

b. Add chemical pot feeder to heating system.

* Indicates Figure A's included in Wing III QPRI Supplement.

9. Figure A 1327.3 - Security System, LCC

   a. Delete exterior door to the Security Room in the LCSB.

   b. Change size of exterior door to the Access Shift Vestibule in the LCSB from 3 x 7 to x 8-6.

10. Figure A 1328.3 - Fire Alarm System, LCC

   a. Add second system for LCEB with an interlock to shut down the ventilating system for the LCC.

   b. Add visual and aural signals for fire in LCEB in both LCEB and LCC.

11. Figure A 1329.3 - Electrical System, Launcher

   a. Revise number of connected circuits.

   b. Reduce commercial power requirement from 112.5 kva to 75 KW with 0.81 PF.

   c. Divide the engine-generator control panel into an engine control panel and a generator control panel, and revise instrumentation.

   d. Shock mount equipment in the LSB.

   e. Remove emergency power test contactor from IWS panel and modify power switching arrangement to delete emergency power test sequence. (Boeing must initiate this change by FCIR. Change description is part of ECP 358.)

   f. On startup of the standby diesel generator, the load is not connected until the generator output reaches given levels. These levels have been raised from 55 cps for Wing II to 60 cps on Wing III and from 80% of nominal voltage on Wing II to 90% on Wing III.

12. Figure A 1330.3 - Shock Attenuation System, LER

   a. Add shock attenuation equipment for the launcher electrical distribution panel.

13. Figure A 1331.3 - Security System, Launcher

   a. Secure personnel access covers with commercial padlocks rather than conventional hardware with keyed locksets in standard hollow steel door.

14. Figure A 1333.3 - Personnel Support Equipment, LCC

   a. Revise the equipmant list to eliminate those items of a "Stock" nature (refrigerator).

b. Include items of built-in nature (bathroom fixtures) not previously called out in any Figure A.

c. Revise quantities to accommodate new estimated personnel requirements.

15. Figure A 1389.3 - Heating and Ventilating System, LSB

a. Relocate unit heater from ceiling of room to underside of shock mounted floor.

b. Add 10,000 cfm supply fan.

c. Change exhaust fan from a 3450 cfm propeller type to a 10,000 cfm centrifugal type.

d. Delete snow melting requirement.

*16. Figure A 1390.3 - Ventilating System, LCSB

a. Delete provision for ventilating engine-generator and brine-chiller relocated to LCEB.

*17. Figure A 1396.3 - Monitor System, Equipment Fault, LCC

a. Add "LCC Supervisory Panel" in LCC (Capsule) containing the following:

(1) Pushbutton for electric door operator between rooms 101 and 102 in the LCSB. At Wing II there is a pushbutton located separately near the inside of the blast door operating the door between rooms 104 and 105 in the LCSB.

(2) To display light, buzzer and silence push-button connected to the control panel on the engine-generator and the Equipment Building Alarm Panel.

(3) An "open-close" switch that controls a solenoid valve in the LCEB between the compressed air cylinders and the buried water storage tank.

(4) A display light, bell and silence push-button connected to the Fire Alarm Control Cabinet (Figure A 1328.3) located in the LCEB.

(5) A display light that indicates when the Tunnel Junction Blast Door is closed and locked.

(6) A display light and three position switch connected to the three power phases in Panel LCPA located in the LCC (Capsule) to monitor incoming power.

* Indicates Figure A's included in Wing III QPRI Supplement.

*17. Figure A 1396.3 - Monitor System, Equipment Fault, LCC (Cont.)

a. (7) An "open-close" switch that controls three solenoid valves, which in turn control air-operated valves on the cold water, drain and vent lines where they enter the capsule.

(8) An "open" pushbutton and "closed" pushbutton to provide manual control for the Shock Contactor located in the LCEB.

b. The Equipment Room Alarm Panel located in the Equipment Room of the LCSB at Wing II is now the Equipment Building Alarm Panel located in the LCEB at Wing III and is changed as follows:

(1) The three display lights for the deleted second environmental control equipment have been removed.

(2) A display light for no (low) LCC air exhaust has been added. The type and location of monitor are not resolved.

c. The following changes are made in the monitoring provisions of the Generator Instrument Panel:

(1) The panel, which is attached to the engine-generator, is now located in the LCEB rather than the LCSB.

(2) A visual display "Engine failure to start" has been added.

(3) A visual display "air intake and/or exhaust blast valves closed" has been added.

d. Add monitor to show closed and locked condition of Tunnel Junction Blast Door, Figure A 1440.3. Indication appears on LCC Supervisory Panel.

e. The LCC Monitor and Alarm Station at Wing II is renamed the LCSB Monitor and Alarm Station at Wing III and is changed as follows:

(1) The display lights (2) for the Generator Room and the Equipment Room are deleted.

(2) The two-way selector switch for the flood lights is deleted.

(3) A display light for the water treatment system is added. The monitor for this display is located on the water meter in the Water Treatment Room, LCSB.

*18. Figure A 1405.3 - Fuel System, Launcher

a. Increase the size of the bulk storage tank located by the LSB from 1500 to 14,300 gallons.

* Indicates Figure A's included in Wing III QPRI Supplement.

*18. Figure A 1405.3 - Fuel System, Launcher (Cont.)

b. Change the day tank located in the LSB from a horizontal to a vertical configuration.

c. Add flexible connections between the bulk storage tank and the day tank.

d. Delete the 10" inspection outlet and manway to grade on the bulk storage tank and add an 18" buried manhole.

e. Relocate the bulk storage tank conservation vent inside the LSB.

*19. Figure A 1436.3 - Ventilating System, LCEB

a. This new requirement is generated by relocating the engine-generator and brine chiller from the LCSB.

b. These provisions were formerly included in Figure A 1390.3, Ventilating System, LCSB.

*20. Figure A 1437.3 - Electrical System, LCSB

a. New Figure A providing for electrical distribution system in the LCSB. Figure A 1323 previously provided for the LCSB, but now provides only for the hardened structures.

b. Provide for mobile standby generator (to be furnished by SAC) for maintaining service in the LCSB.

*21. Figure A 1438.3 - Fuel System, LCEB

a. Provide fuel storage for the standby engine-generator.

b. This requirement was previously satisfied by Figure A 1230, Fuel System, LCSB.

*22. Figure A 1439.3 - Shock Attenuation System, LCEB

a. Provide shock floor and attenuators for the new structure, complying with Wing III shock criteria.

*23. Figure A 1440.3 - Blast Door Installation, LCC, Tunnel Junction

a. Add blast door at the elevator shaft entrance to the Tunnel Junction. This door protects the equipment and space both within the Tunnel Junction and the LCEB.

*24. Figure A 1441.3 - Shock Attenuation System, LSB

a. This is a new requirement providing for increased shock protection of essential equipment in the LSB.

* Indicates Figure A's included in Wing III QPRI Supplement.

*25. Figure A 1450.3 Accumulator Set, 24-Inch Blast Valve Control

* Indicates Figure A's included in Wing III QPRI Supplement.

OPERATIONAL GROUND EQUIPMENT (OGE) CHANGES

*1. Figure A 1211.3 - Environmental Control System, Launcher

a. Delete the 8" blast valve on the air duct to the LER.

b. Reduce the size of the make-up air duct between the LSB and the LER from 6" to 2" and add a buried serpentine coil to increase the total length.

c. Mount control panels in the LER on shock mounts.

d. Replace the blast check valves on the brine lines entering the LER with "safety heads."

e. Add an absolute filter to the end of the make-up air duct located in the LSB.

f. Redesign the shock mounting of the equipment.

g. Redesign the control panel to provide automatic starting and stopping with 36" blast damper operation.

*2. Figure A 1212.3 - Environmental Control System, LCC

a. Relocate the air conditioning equipment from the LCSB to the LCEB.

b. Add provision for automatic shutdown of the air conditioning equipment in the event of fire in the LCEB.

c. Add a "clean room" to enclose the air handling equipment in the LCEB.

d. Add a monitor to sense low exhaust air flow from the capsule.

e. In the SRCC configuration, replace the dual units used in Wing II with a single large-capacity chiller and air handling unit.

3. Figure A 1246.3 - Cable Assembly Set, Launch Control Facility

a. ECP 403 - Delete, revise, and add cables as required to accommodate changes made to mating facilities and RPIE in the LCF.

4. Figure A 1248.3 - Cable Assembly Set, Launcher

a. ECP 358 - Delete, revise, and add cables as required to accommodate changes made to OGE by this ECP.

* Indicates Figure A's included in Wing III QPRI Supplement.

5. Figure A 1373.3 - Electrical Surge Arrestor, LCF

   a. ECP 401 - Change the ESA to accommodate cable conductor pair count and the hard and soft cable plant peculiar to Wing III. Add surge protection for the soft lines connected to equipment relocated to the LCEB.

6. Figure A 1374.3 - Electrical Surge Arrestor, LF

   a. ECP 401 - Revise to accommodate changes similar to those for Figure A 1373.3.

7. Figure A 1376.3 - Interconnecting Box, LCC

   a. ECP 402 - Revise wiring to accommodate new signal conductors and routing peculiar to Wing III.

8. Figure A 1377.3 - Interconnecting Box, LF

   a. ECP 402 - Revise to accommodate changes in plug and connector sizes resulting from an increase in number of signal conductors. Revise internal and shorting plug wiring to accommodate new signal conductors and routing peculiar to Wing III.

*9. Figure A 1383 - Gear Rack Assembly, Launcher Closure

   This item is deleted.

*10. Figure A 1417.2 - Valves, Blast (8")

   This item is deleted.

11. Figure A 1418.3 - Valves, Blast (24"), LCC

   a. ECP 396 - Revise to contain limit switches for indicating open and closed positions.

*12. Figure A 1428.3 - Valves, Blast (36"), LCEB

   a. ECP 396 - Provide two new 36" valves to protect the LCEB from blast. Design the valves for hydraulic operation and provide a means for electrical interlock control for standby generators.

*13. Figure A 1429.3 - Blast Dampers, LSB

   a. ECP 396 - Provide two new blast dampers in each LSB. Design the valves to be actuated to the closed position by overpressure alone and to reopen automatically upon return of atmospheric pressure to near normal.

* Indicates Figure A's included in Wing III Supplement.

*14. Figure A 1432.3 - Control System Blast Valve

a. ECP 396 - Provide a new Blast Valve Control System to power and control the blast valves installed in the LCEB and the LCC.

(1) The LCEB portion of the system, used to control the 36" Blast Valves, consists of a hydraulic pump and motor, reservoir, hydraulic-nitrogen accumulator and hydraulic-electrical control panel.

(2) The LCC portion of the system, used to control the 24" Blast Valves, consists of a hydraulic-electrical control panel, a hydraulic reservoir and a hydraulic-nitrogen accumulator. Also included, but packaged separately, is a portable hand-operated hydraulic pump with reservoir.

*15. Figure A 1443.3 - Rail, Hydraulic Jack

a. ECP 321 - Modify and permanently attach to the LF apron a 90 pound per yard railroad track rail with notches appropriately spaced to be compatible with Hydraulic Jack, Figure A 4640.3.

* Indicates Figure A's included in Wing III Supplement.

MAINTENANCE GROUND EQUIPMENT (MGE) CHANGES

*1. Figure A 4105 - Gearcase-Motor, Launcher Closure

a. ECP 321 - This item is deleted.

*2. Figure A 4141 - Dolly, Gearcase-Motor

a. ECP 321 - This item is deleted.

*3. Figure A 4277 - Sling, Gearcase-Motor

a. ECP 321 - This item is deleted.

*4. Figure A 4282 - Hoist, Gearcase-Motor

a. ECP 321 - This item is deleted.

5. Figure A 4370 - Test Stand, Gearcase-Motor

a. ECP 321 - This item is deleted.

6. Figure A 4540.3 - Cable Assembly Set

a. ECP 450 - This Figure A will require reduced quantities to accommodate differences in hardware allocation.

*7. Figure A 4640.3 - Jack Kit, Hydraulic

a. ECP 321 - This is a new item of MGE, replacing Figure A 4105, Gearcase Motor. This new item was initiated through BSD/STL direction. As an off-the-shelf procurement, this Figure A will be controlled by a Specification Control Drawing.

*8. Figure A 4645.3 - Dolly, Hydraulic Jack

a. ECP 321 - This is a new item of MGE, replacing Figure A 4141, Dolly, Gearcase Motor. This new item will facilitate handling of the Hydraulic Jack Kit at the Launch Facility. In addition, this item will support the Hydraulic Jack Kit during transportation between the SMSB and the Launch Facility. This is to be a Boeing designed piece of equipment.

*9. Figure A 4646.3 - Sling, Hydraulic Jack

a. ECP 321 - This is a new item of Boeing designed MGE, replacing Figure A 4277, Sling, Gearcase Motor. This sling will be used to facilitate the handling of the Hydraulic Jack Kit (with Dolly) between the Launcher Apron and the transporting vehicle.

* Indicates Figure A's included in Wing III Supplement.

*10. Figure A 4648. 3 - Hoist, Hydraulic Jack

a. ECP 321 - This is a new item of MGE, replacing Figure A 4282, Hoist, Gearcase Motor. This hoist will operate both on the Launcher-Closure and on the Launcher-Apron to facilitate handling of the Hydraulic Jack Kit, with Dolly. This will be a Boeing designed item.

* Indicates Figure A's included in Wing III Supplement.

SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II			
AFSC	Subsystem/Operation Involved	Status	Page
1825G	Maintenance Flow-Weapon System (25-33502)		
	2.0 LCC Operator Is Alerted to a Malfunction Condition Within The LCEB and Notifies Security Guard	Added	4-15A. 3
	2.1 LCC Operator Informs Security Guard if LCEB Standby Generator Fails to Start	Added	4-15A. 3
	5.0 Security Guard Requests Standby Personnel to Investigate the Malfunction and Standby Personnel Proceed to Assigned Area	Added	4-15A. 3
	7.4 Operator Makes Procedural Checks at Shift Change	Changed	4-17A. 3
	7.6 Operator Makes Procedural Checks of Continuous Power Availability	Changed	4-17B. 3
	7.7 Operator Makes Procedural Checks on SAC Terminal Equipment	Changed	4-17B. 3
31255G	Position Description	Changed	4-216. 3, 4-217. 3
44250Z	Position Description	Changed	4-667. 3, 4-668. 3
44350G	Launcher Closure - Open-Close (25-33510)		
	1.2 Unload and Emplace Closure Open-Close Assembly	Added	4-721 L. 3
	1.7 Open Closure by Actuating Open Close Assembly and Cable Takeup Device	Added	4-721I. 3
	2.0.1 Prepare Open-Close Assembly for Operation	Added	4-721J. 3
	2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	Added	4-721J. 3
	2.8 Remove and Stow Closure Open-Close Assembly	Added	4-721 J. 3
54150G	Position Description	Changed	4-784. 3 thru 4-787. 3
	Launcher Closure - Open-Close (25-33510)		
	1.2 Unload and Emplace Closure Open-Close Assembly	Changed	4-799A. 3

TABLE i-1B. 3

SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II			
AFSC	Subsystem/Operation Involved	Status	Page
54150G	Launcher Closure - Open-Close (25-33510) (Cont.)		
	1.7 Open Closure by Actuating Open-Close Assembly and Cable Take-Up Device	Changed	4-799A. 3
	2.0.1 Prepare Open-Close Assembly for Operation	Added	4-800A. 3
	2.3 CloseLaun ncher Closure by Actuating Open-Close Assembly and Cable Take-Up Device	Changed	4-800A. 3
	2.8 Remove and Stow Closure Open-Close Assembly	Changed	4-801. 3
	Environmental Control & Ventilation Systems, Launcher, "0" Indenture	Added	4-819. 3
	1211. 3 Environmental Control System, Launcher	Changed Added	4-819. 3 4-819A. 3, 4-819B. 3
	1383 Gear Rack Assembly, Launcher Closure	Deleted	4-836
	1405. 3 Fuel System, Launcher	Changed	4-837. 3
	1429. 3 Blast Dampers, LSB	Added	4-837A. 3
	1441. 3 Shock Attenuation System (LSB)	Added	4-837B. 3
	1443. 3 Rack, Rail Hydraulic Pusher	Added	4-837C. 3
	1417. 2 Valve Blast, 8-Inch	Deleted	4-838A. 2, 4-838B. 2
	Environmental Control & Ventilation Systems, LC C, "0" Indenture	Added	4-842. 3
	1212. 3 Environmental Control System, LCC	Changed Added	4-842. 3 4-842A. 3 thru 4-842C. 3
	1230. 3 Fuel System, LCSB	Added	4-842D. 3
	1242. 3 Lift, Service LCC	Changed	4-844. 3
	1323. 3 Electrical System, LCC	Deleted	4-848
	1324. 3 Water Supply System, LCC	Deleted	4-849
		Deleted	4-848A. 2, 4-848B. 2
	1390. 3 Ventilation System, LCSB	Changed Deleted	4-854. 3 4-854A. 2
	1396. 3 Monitoring System Equipment Fault, LCC	Added	4-854E. 3
	1428. 3 Valve, Blast, 36-Inch	Added	4-854F. 3, 4-854G. 3
	1432. 3 Control System, Blast Valve (LCC)	Added	4-854H. 3 thru 4-854K. 3
	1436. 3 Ventilation System (LCEB)	Added	4-854L. 3
	1438. 3 Fuel System (LCEB)	Added	4-854M. 3
	1439. 3 Shock Attenuation System (LCEB)	Added	4-854N. 3
	1440. 3 Blast Door Installation (Tunnel Junction)	Added	4-854O. 3

TABLE i-1B. 3

SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II			
AFSC	Subsystem/Operation Involved	Status	Page
54150G	1450. 3 Accumulator Set, 24-Inch Blast Valve Control (LCC)	Added	4-854P. 3
	4141 Dolly Assembly, Gearcase-Motor	Deleted	4-886
	4282 Hoist, Gearcase-Motor	Deleted	4-888, 4-889
54250G	Position Description	Changed	4-890. 3 thru 4-892. 3
	1323. 3 Electrical System (LCC)	Added	4-943A. 3
	1396. 3 Monitoring System, Equipment, Fault, (LCC)	Changed Deleted	4-960. 3 4-961
	1437. 3 Electrical System (LCSB)	Added	4-963A. 3
54550Y	Position Description	Changed	4-1059. 3, 4-1060. 3
	1211. 3 Environmental Control System, LF	Changed	4-1064. 3 thru 4-1066AC. 3
	1212. 3 Environmental Control System, LCF	Changed	4-1071. 3 thru 4-1071AF. 3
	1390. 3 Ventilation System, LCSB	Changed	4-1072. 3
	1436. 3 Ventilation System, LCEB	Added	4-1072A. 3
	1211. 3 Environmental Control System, LF	Changed Added	4-1074. 3 4-1074A. 3 thru 4-1074C. 3
	1212. 3 Environmental Control System, LCF	Added	4-1074D. 3 thru 4-1074G. 3

TABLE i-1B. 3

AFSC: 18250

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MAINTENANCE FLOW - WEAPON SYSTEM - 25-33502				
2.0 LCC Operator Is Alerted To A Malfunction Condition Within The LCEB And Notifies Security Guard	**2.0 LCC Operator Is Alerted To A Malfunction Condition Within The LCEB And Notifies Security Guard** **A.** The missile combat crew is alerted to LCEB malfunction by audible alarm. Auxiliary operator silences alarm and observes supervisory panel. **B.** LCC operator notifies security guard of a malfunction in the LCEB.	1396.3 Monitoring System, Equipment Fault, LCC 1300 Handset (SIN/LCC) 1246.3 Cable Assembly Set, LCC 1343 Telephone (SIN/LCC)	211/2 211/2	.01/LCC/ .02/LCC/
2.1 LCC Operator Informs Security Guard If LCEB Standby Generator Fails To Start	**2.1 LCC Operator Informs Security Guard If LCEB Standby Generator Fails to Start** **A.** LCC operator observes loss of overhead lighting. If lights do not come back on in one (1) minute, auxiliary operator uses switch on supervisory panel to verify loss of three phase power. **B.** LCC operator notifies security guard that standby generator has failed to pick up load.	1300 Handset (SIN/LCC) 1343 Telephone (SIN/LCC) 1246.3 Cable Assembly Set, LCC 1396.3 Monitoring System Equipment Fault, LCC	211/2 211/2	.02/LCC/ .02/LCC/
5.0 Security Guard Request Standby Personnel to Investigate the Malfunction and Standby Personnel Proceed to Assigned Area	**5.0 Security Guard Request Standby Personnel to Investigate the Malfunction and Standby Personnel Proceed to Assigned Area** **D.** Auxiliary operator unlocks access shaft door by remote switch located on supervisory panel.	Intercom System 1343 Telephone (SIN/LCC) 1300 Handset (SIN/LCC) 1396.3 Monitoring System, Equipment Fault, LCC	111/1	.01/LCC/

AFSC: 1825G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MAINTENANCE FLOW - WEAPON SYSTEM - 25-33502 **7.0 LCC Operator Conducts Procedural Checks** **7.4 Operator Makes Procedural Checks At Shift Change (OGE & RPIE)**	**7.4 Operator Makes Procedural Checks At Shift Change (OGE & RPIE)** **A. Prior to the start of shift, the missile combat crew makes a procedural check of the LCEB for:** Oil, water, or fuel leaks Alarm or fault indications on fault display panel and engine cranking panel. Fuel level on day tank sight gauge. Fuel level in main tank by operating bubbler system Level of lube oil in storage tank. Coolant water in radiator of diesel generator. Position of LCEB blast valves by observing indicators on blast valve control system panel. For blast valve nitrogen and hydraulic pressure by observing indicators on blast valve control system panel. **B. Prior to start of shift the missile combat crew checks LCC capsule:** Shock attenuation system pressure by obs rving pointer and scale. Emergency air purifying system by starting pump Console seats by operating controls and moving chair on slides. Empty relief container. Blast door locking mechanism Survival kit by visual check of condition and amount Blast valve position by obeerving indicators on blast valve control system panel. Blast valve nitrogen and hydraulic pressure and by observing indicators on blast valve control system panel. Launch panel for tampering.	1212.3 Environmental Control System, Launch Control System 1241.2 Shock Attenuation System (LCC) 1243 Console, Launch Control 1421.2 Shock Isolator 1420.2 Damper, Sway 1326 Door, Subsystem, Blast 1334 Seat, Operator's 1396.3 Monitoring System, Equipment Fault, LCC 1432.3 Control Blast Valve 1335 Seat, Operator's 1323.3 Electrical System	232/2 232/2	.08/LCC/ .09/LCC/

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AFSC: 1829G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MAINTENANCE FLOW - WEAPON SYSTEM - 25-33502 **7.0 LCC Operator Conducts Procedural Checks**				
7.6 Operator Makes Procedural Checks of Continuous Power Availability	**7.6 Operator Makes Procedural Checks of Continuous Power Availability** **C. The LCC operator verifies engine generator automatic start-up and load transfer are performed satisfactorily. The LCC operator verifies that essential hardened facility loads are satisfactorily carried by generator.**	**1243 Console, Launch Control** **1300 Handset (SIN/LCC)** **1323.3 Electrical System (LCC**	**221/2**	**/LCC/**
7.7 Operator Makes Procedural Checks on SAC Terminal Equipment	**7.7 Operator Makes Procedural Checks on SAC Terminal Equipment** **A. LCC operator checks HF/UHF radio system by establishing communication and verify satisfactory transmission and reception.**	**1368 Radio Set (HF/UHF)** **1423 Antenna** **1424 Antenna** **1425 Arrester Assembly, Electrical Surge** **1426 Antenna**	**121/1**	**.03/LCC/**

POSITION DEFINITION

POSITION NO. 5	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
	Ballistic Missile Checkout Equipment Specialist/Technician	AFSC 31[illegible]G/75G

GENERAL FEATURES

POSITION SUMMARY:

The Ballistic Missile Checkout Equipment Specialist is responsible for the Support Base maintenance and calibration of Electronic Test Equipment such as:

623	C90 Adapter Group, Test
624	C91 Test Center, Programmer - Fault Locator
717.2	Test Set, Photo-Electronic Collimator
3007	Test Set, Explosive Set Circuitry
3013	Test Set, Command Control Console
3092	Test Set, Programmer Group
4012	Test Set, Sensitive Command Network
4018	Test Adapter C91
4152.2	Test Equipment, Electronic Facility, Base Maintenance
4490	Missile Simulator
4489	Message Generator
10709	C153 Test Set, Missile Control Group

R

The Ballistic Missile Checkout Equipment Specialist is responsible for troubleshooting and repairing interconnecting circuits of the Sensitive Command Network, Security System, Programmer Group, and Command Control Console when returned to the Support Base.

POSITION DEFINITION

POSITION NO. 5	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
	Ballistic Missile Checkout Equipment Specialist/Technician	AFSC 31255G/75G

POSITION SUMMARY: (Cont.)

Checkout and testing is accomplished using self test features of programmed checkout equipment, and by using standard voltmeters, frequency meters, oscilloscopes and hand tools.

ENVIRONMENT:

Work Location: The Ballistic Missile Checkout Equipment Specialist's duty location is in the Maintenance Branch - Electronic Section at the Support Base.

Lines of Supervision: He will be supervised at the Support Base by the Missile Officer, AFSC 3124G.

QUALIFICATIONS:

The Ballistic Missile Checkout Equipment Specialist is required to perform at a low to high perceptual skill level (high level is required for test, visual inspection, function checkout, and repair of test equipment); high judgmental skill level is required for accomplishing all detailed electronic maintenance functions; motor skill demands range from high to low.

Task performance is generally critical to subsystem operation.

RELATION TO EXISTING AIR FORCE SPECIALTIES:

This position type falls within the scope of AFS Ballistic Missile Checkout Equipment Specialist/Technician, AFSC 31255G/75G.

POSITION DEFINITION

POSITION NO. 10	POSITION TITLE Missile Pneudraulic Repairman/Repair Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 44[illegible]Z/70Z

GENERAL FEATURES

POSITION SUMMARY:

The Missile Pneudraulic Repairman is responsible for Support Base repair, checkout and testing of the hydraulic equipment components removed from Transporter-Erectors. He is also responsible for assisting the Missile Mechanic/Technician in fault isolating, removing, installing and checking hydraulic equipment components of the Transporter-Erector Tractor and Transporter-Erector Trailer.

He is responsible for testing and repair of pneudraulic components found in equipment such as:

1249.	Personnel Hatch Installation System	R
1326.2	Blast Door	R
		R(3)

He also provides assistance on an "as required" basis to the Electro-Mechanical Team for detailed troubleshooting and repair of pneudraulic components at the Launch Facility and the Launch Control Facility.

ENVIRONMENT:

Work Location: The Missile Pneudraulic Repairman is assigned to the Mechanical Section of the Missile Maintenance Squadron.

POSITION DEFINITION

POSITION NO. 10	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
	Missile Pneudraulic Repairman/Repair Technician	AFSC 44250Z/70Z

ENVIRONMENT: (Cont.)

Lines of Supervision: He is supervised by the Missile Officer, AFSC 3124G.

QUALIFICATIONS:

The perceptual, judgmental and motor skills required for this position are essentially low to medium. For functions such as fault isolation and checkout, these same skills are considered medium to high.

Task performance is considered critical to Subsystem operations.

RELATION TO EXISTING AIR FORCE SPECIALTIES:

This position falls within the scope of AFS Missile Pneudraulic Repairman/Repair Technician, AFSC 44250Z/70Z.

AFSC: 44350G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN - CLOSE - 25-33510				
1.0 Open Launcher Closure				
1.2 Unload and Emplace Closure Open-Close Assembly	**1.2 Unload And Emplace Closure Open-Close Assembly**			
	A. Remove the launcher closure open-close equipment from the stowed position on the maintenance vehicle using the vehicle mounted hoist.	**Common Hand Tools** **4640.3 Jack Kit, Hydraulic** **1443.3 Rail, Hydraulic Jack**	**222/1**	**.25/LF/**
	B. Move the open-close equipment to the top of the launcher closure.	**4646.3 Sling, Hydraulic Jack** **4645.3 Dolly, Hydraulic Jack**	**222/1**	**.03/LF/**
	D. Attach sling to the hoist and to the hydraulic jack and lower the hydraulic jack with dolly to the launcher apron.	**4648.3 Hoist, Hydraulic Jack** **4031 Truck, Mechanical Maintenance**	**222/1**	**.07/LF/**
	G. Reposition the portable hoist into the socket clamp, attach sling to the hydraulic jack, release dolly attachments, hoist jack with simulated rail section of the dolly and install on the rail plate.		**222/1**	**.20/LF/**
	J. Move the hydraulic jack onto the rail and pull the jack to the launcher closure.		**222/1**	**.02/LF/**
	K. Assemble the draw bar and attach to the launcher closure.		**222/1**	**.05/LF/**
	L. Prepare hydraulic jack for operation by attaching hoses and starting pump.		**222/1**	**.05/LF/**
1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device	**1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device**			
	B. Operate control handles on hydraulic jack and hydraulic pump to open launcher closure	**4640.3 Jack Kit, Hydraulic** **1443.3 Rail, Hydraulic Jack** **4305 Cylinder/Valve, Compressed Gas** **1329.3 Electrical System, Launcher**	**222/1**	**.35/LF/**

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN-CLOSE - 25-33510				
2.0 Close Launcher Closure	**2.0.1 Prepare Open-Close Assembly For Operation**			
2.0.1 Prepare Open-Close Assembly For Operation	**A.** Disconnect hydraulic hoses from hydraulic jack.	4640.3 Jack Kit, Hydraulic	222/1	.01/LF/
	B. Disassemble drawbar having end place attached to the closure.	1443.3 Rail, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	112/1	.02/LF/
	C. Move the hydraulic jack off the rail onto the simulated rail section of the dolly, rotate the hydraulic jack to reverse the direction, re-install the jack onto the rail and attach hoses.		222/1	.10/LF/
	D. Re-assemble drawbar if necessary.		112/1	.03/LF/
2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	**2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device**			
	G. Actuate the hydraulic jack and move closure to the predetermined position.	4305 Cylinder/Valve, Compressed Gas	222/1	.23/LF/
	H. Unlock handle and maintain downward pressure while closing the closure until cables have been engaged and cable load transferred from the arresting lugs to the rocker arm, and stop.	1280 Actuating & Locking Mechanism, Launcher Closure 4634 Resetting Device, Launcher Closure Actuator 4640.3 Kit, Hydraulic Jack Industrial Safety Belt Industrial Safety Strap	223/1	.12/LF/
2.8 Remove and Stow Closure Open-Close Assembly	**2.8 Remove and Stow Closure Open-Close Assembly**			
	C. Move the hydraulic jack off the rail onto the dolly section mounted on the rail plate.	4031 Truck, Mechanical Maintenance	222/1	.01/LF/
	E. Place the portable hoist in the socket clamp, attach sling, lift the hydraulic jack with simulated rail section off the dolly and place on the wheeled section of the dolly.	4640.3 Kit, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack 4646.3 Sling, Hydraulic Jack 4648.3 Hoist, Hydraulic Jack	222/1	.20/LF/
	F. Move the dolly to the launcher closure, reposition portable hoist to the socket anchor on the closure.		222/1	.02/LF/
	G. Attach hoist and sling and lift the dolly and jack to the top of the launcher closure.		222/1	.08/LF/
	H. Remove socket clamp from rail and drawbar end piece from launcher closure.		222/1	.03/LF/
	I. Stow all equipment.		222/1	.30/LF/

POSITION DEFINITION

POSITION NO.	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
12	Missile Facilities Specialist/Technician	AFSC 54150G/70G

GENERAL FEATURES

POSITION SUMMARY:

The Missile Facilities Specialist/Technician is a member of the Missile Team. As a member of this team, he assists in opening and closing the Launch Tube Closure; emplacing and handling environmental covers, personnel cage, safety barriers, and blowers; and assists in preparing the Re-Entry Vehicle - Guidance and Control Van for Missile, Re-Entry Vehicle or Guidance and Control Section removal and replacement.

The Missile Facilities Specialist/Technician is a member of Electro-Mechanical Team and is responsible for the inspecting, servicing, troubleshooting, removal and replacement of equipment and components such as:

1202	G&C Umbilical Retraction Mechanism	
1207	Drier-Air Compressor, Hardened Cable	
1209.3	Water Control and Removal System, Launcher	R
1210.3	Sewage Disposal System, Launch Control Center	R
1211.3	Environmental Control System, Launcher	R
1212.3	Environmental Control System, Launch Control Center	R
1214	Guidance Section Liquid Cooler	
1217	Closure, Launcher Tube	
1230.3	Diesel Fuel Oil System, Launch Control	R
1241.3	Shock Attenuation System, LCC	R
1242.3	Service Lift, Launch Control Facility	R

POSITION DEFINITION

POSITION NO. 12	POSITION TITLE Missile Facilities Specialist/Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 54150G/70G

POSITION SUMMARY: (Cont.)

1249	Hatch Installation, Launcher	
1280	Launcher Closure Actuating and Locking Mechanism	
1282	Battery, Emergency Power	
1288	Battery, Emergency Power	
1283	Motor Generator Set	
1318	G&C Cooling Plumbing Set	
1325.3	Heating System, LCSB	R
1326.2	Blast Door Installation, Launch Control Capsule	R
1330.3	Shock Attenuation System, Launcher Equipment Room Floor	R
1390.3	Ventilation System	R
1418.3	Valve, Blast, 24-Inch	R(2)
1420.3	Damper Set, Sway, Shock Attenuation	R
1421.2	Shock Isolator, Shock Attenuation	
1443.3	Rail, Hydraulic Pusher	R
1447	Drier, Air Compressor, Hardened Cable	R

He is assisted in detailed troubleshooting of these equipments by the appropriate AFS having detailed knowledge, such as 44250Z, 54550Y, 54250G or 54350.

He performs maintenance and tests at the Launch Facility on the ballistic charge on the

POSITION DEFINITION

POSITION NO. 12	POSITION TITLE Missile Facilities Specialist/Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 54150G/70G

POSITION SUMMARY: (Cont.)

Rotary Actuator Assembly and the Ballistic Gas Generator in the Launch Tube Closure Actuator Mechanism.

At the Support Base he is responsible for inspection, servicing and referral to the appropriate section in the Maintenance Branch for detailed repair of mechanical Maintenance Ground Equipment, such as: Elevator and Work Cage, Safety Barrier, Truck Dolly, Launcher Closure Tractor, etc.

ENVIRONMENT:

Work Location: He performs his duties and tasks at the Launch Facilities, Launch Control Facilities, and the Support Base.

Lines of Supervision: As a member of the Mobile Maintenance Teams, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G. At the Support Base he is supervised by the Missile Officer, AFSC 3124G.

QUALIFICATIONS:

The Missile Facilities Specialist/Technician's skill requirements range from low to medium. Medium perceptual skill is required for troubleshooting, inspection, and checkout functions. Medium judgmental skill is required for accomplishing the various detailed maintenance procedures. Medium motor skill is required for installation and removal of assemblies and for aligning and adjusting tasks.

Composite-test, checkout, visual check and some non-verifiable repair, installation and servicing functions involve tasks whose performance are critical to subsystem operation but which may affect system operation if not correctly performed.

POSITION DEFINITION

POSITION NO. 12

POSITION TITLE
Missile Facilities Specialist/Technician

RECOMMENDED OR AUTHORIZED AFSC
AFSC 54150G/70C

RELATION TO EXISTING AIR FORCE SPECIALTIES:

This position type falls within the scope of AFS Missile Facilities Specialist/Technician, AFSC 54150G/70G.

AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN-CLOSE - 25-33510				
1.0 Open Launcher Closure				
1.2 Unload And Emplace Closure Open-Close Assembly	1.2 Unload and Emplace Closure Open-Close Assembly			
	A. Remove the launcher closure open-close equipment from the stowed position on the maintenance vehicle using the vehicle mounted hoist.	Common Hand Tools 4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack	222/1	.25/LF/
	B. Move the open-close equipment to the top of the launcher closure.	4646.3 Sling, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	222/1	.03/LF/
	C. Install portable hoist in launcher closure socket.	4648.3 Hoist, Hydraulic Jack	222/1	.02/LF/
	D. Attach sling to the hoist and to the hydraulic jack, and lower the hydraulic jack with dolly to the launcher apron.	4031 Truck, Mechanical Maintenance	222/1	.07/LF/
	E. Move the dolly with hydraulic jack to the end of the launcher apron.		222/1	.02/LF/
	F. Attach the socket clamp of Figure A 4648.3 to the hydraulic jack rail.		222/1	.02/LF/
	G. Reposition the portable hoist into the socket clamp, attach sling to the hydraulic jack, release dolly attachments, hoist jack with simulated rail section of the dolly and install on the rail plate.		222/1	.20/LF/
	H. Remove socket clamp from rail.		111/1	.01/LF/
	I. Remove wheeled section of dolly from the launcher apron.		111/1	.01/LF/
	J. Move the hydraulic jack onto the rail and pull the jack to the launcher closure.		222/1	.02/LF/
	K. Assemble the drawbar and attach to the launcher closure.		222/1	.05/LF/
	L. Prepare hydraulic jack for operation by attaching hoses, and starting pump.		222/1	.05/LF/
1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device	1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device			
	B. Operate control handles on hydraulic jack and hydraulic pump to open launcher closure.	4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4305 Cylinder/Valve, Compressed Gas 1329.3 Electrical System, Launcher	222/1	.35/LF/

AFSC: 94150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN-CLOSE - 25-33510				
2.0 Close Launcher Closure				
2.0.1 Prepare Open-Close Assembly For Operation	2.0.1 Prepare Open-Close Assembly For Operation			
	A. Disconnect hydraulic hoses from hydraulic jack.	4640.3 Jack Kit, Hydraulic	222/1	.01/LF/
	B. Disassemble drawbar leaving end piece attached to the closure.	1443.3 Rail, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	112/1	.02/LF/
	C. Move the hydraulic jack off the rail onto the simulated rail section of the dolly, rotate the hydraulic jack to reverse the direction, re-install the jack onto the rail and attach hoses.		222/1	.10/LF/
	D. Re-assemble drawbar if necessary.		112/1	.03/LF/
2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	2.3. Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device			
	A. Open regulating valve on air bottle.	4305 Cylinder/Valve, Compressed Gas	221/1 221/2	.02/LF/ .02/LF/
	B. Inspect open launcher closure			
	C. Obtain special tool from semi-trailer.	1280 Actuating & Locking Mechanism, Launcher Closure	111/1 222/1 222/1	.10/LF/ .10/LF/ .12/LF/
	D. Install tool and personnel safety restraints.			
	E. Engage tool to multiplying linkage piston and attach tool to clevis type fitting on closure.			
	F. Apply upward pressure to the tool handle to rotate the multiplying linkage rocker arm to the fully retracted position and lock handle.	4634 Resetting Device, Launcher Closure Actuator	222/1	.02/LF/
	G. Actuate the hydraulic jack and move closure to the predetermined position.	4640.3 Kit, Hydraulic Jack	222/1	.23/LF/
	H. Unlock handle and maintain downward pressure while closing the closure until cables have been engaged and cable load transferred from the arresting lugs to the rocker arm and stop.	Industrial Safety Belt Industrial Safety Strap	223/1	.12/LF/
	I. Remove tool and stow.		111/1	.10/LF/
	J. Complete closing and locking sequence.		223/1	.10/LF/
	K. Inspect closed launcher closure.		221/2	.02/LF/

AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN-CLOSE - 25-33510				
2.0 Close Launcher Closure				
2.8 Remove And Stow Closure Open-Close Assembly	**2.8 Remove And Stow Closure Open-Close Assembly**			
	A. Detach electrical connections.	4031 Truck, Mechanical Maintenance	222/1	.01/LF/
	B. Detach mechanical fasteners.		222/1	.02/LF/
	C. Move the hydraulic jack off the rail onto the dolly section mounted on the rail plate.	4640.3 Kit, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	222/1	.01/LF/
	D. Attach the socket clamp of Figure A 4648.3 to the hydraulic jack rail.	4646.3 Sling, Hydraulic Jack 4648.3 Hoist, Hydraulic Jack	222/1	.02/LF/
	E. Place the portable hoist in the socket clamp, attach sling, lift the hydraulic jack with simulated rail section off the dolly and place on the wheeled section of the dolly.		222/1	.20/LF/
	F. Move the dolly to the launcher closure, reposition portable hoist to the socket anchor on the closure.		222/1	.02/LF/
	G. Attach hoist and sling and lift the dolly and jack to the top of the launcher closure.		222/1	.08/LF/
	H. Remove socket clamp from rail and drawbar end piece from launcher closure.		222/1	.03/LF/
	I. Stow all equipment.		222/1	.30/LF/

AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL & VENTILATION SYSTEMS, LAUNCHER "O" Indenture	COMPOSITE TEST: Observe operation of supply fan, and Exhaust fan. If operation of either fan is unsatisfactory Environmental Control System, Fig "A" 1211.3 is faulted.		121/1	.10/LF
	Observe Control Air pressure. If Control Air pressure is unsatisfactory Environmental Control System Fig "A" 1211.3 is faulted. If Control Air pressure is satisfactory proceed to next step.		121/1	.10/LF
	Observe positioning of Modulating Damper. If diesel not operating, vary setting of Room Thermostat and observe damper movements. If diesel operating, vary setting of Diesel Thermostat and observe damper movements. If damper positioning is not satisfactory, Ventilation System Fig "A" 1389.3 is faulted. If damper positioning is satisfactory proceed to Indenture 1 on form C/Cl's of Environmental Control System Fig "A" 1211.3.		121/1	.10/LF
Environmental Control System, Launcher - 1211.3	CLEAN: Place circuit breakers No. 5 and No. 7 in LDA Panel and circuit breaker No. 7 in LWS Panel to OFF position and attach Warning Placard in conspicuous position.	Cleaner, Vacuum Placard, Warning	111/1	.10/LF/3M
	Place brine chiller key switch in brine chiller control panel and key switch in vent system control panel in OFF position.	Stepladder, 6-foot Lantern, Electric	111/1	.05/LF/3M
	Clean fans, motors and air compressors.		111/1	.15/LF/3M
	Clean all gages and instruments.		111/1	.15/LF/3M
	Place circuit breakers No. 5 and No. 7 in LDA Panel and circuit breaker No. 7 in LWS Panel in ON position and remove warning placard.		111/1	.10/LF/3M
	Place brine chiller key switch and vent system key switch in ON position. Use lantern and stepladder to facilitate clean function.		111/1	.05/LF/3M
	INSPECT: Check motors, pump, fans and compressors for excessive vibration or overheating.	Common Hand Tools Lantern, Electric	111/1	.20/LF/3M
	Inspect electrical conduits for damage or loose connections Use lantern to facilitate inspection.	Stepladder, 6-foot	111/1	.15/LF/3M
	REPAIR: Tighten and secure loose piping connections.	Common Hand Tools	111/1	.15/LF/
	Tighten and secure loose electrical wiring and connections.		111/1	.15/LF/
	Tighten and secure loose components.		111/1	.15/LF/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER **Environmental Control System, Launcher 1211.3** **/2 Brine Subsystem, Chilled**	SERVICE: Check sight glass for presence of bubbles, while compressor is running.	Kit, Lubrication Common Hand Tools	211/1	.05/LF/3M
	Place brine chiller key switch SW-1 in panel P-1, and key switch SW-2 in panel P-2 in OFF position.	Stepladder, 6-foot Hydrometer (Ethylene Glycol)	111/1	.05/LF/3M
	Place brine pump circuit breaker CB-1 in panel P-1 and compressor motor circuit breakers CB-2 in panel P-2 in OFF position and attach Warning Placard in conspicuous position.	Lantern, Electric Dispensing Pump, Hand Driven	111/1 121/1	.05/LF/3M .05/LF/3M
	Add lube oil to compressor, as required.	Placard, Warning	111/1	.10/LF/3M
	Add brine solution to required level in expansion tank, ET-1 using pump.	Container, 5-Gallon	111/1	.05/LF/3M
	Remove and clean brine line strainer screen.	Container, 1-Gallon Pump, Rotary Hand Driven	111/1	.05/LF/3M
	Place brine pump and compressor motor circuit breaker in ON position and remove Warning Placard.		111/1	.05/LF/3M
	Place brine chiller key switch SW-1 and key switch SW-2 in ON position.	4031 Truck, Mechanical Maintenance	111/1	.05/LF/3M
	SERVICE: Place brine pump circuit breaker CB-1 in panel P-1 in OFF position and attach Warning Placard in conspicuous position. Add brine solution to required level in expansion tank, ET-1 using pump.	Stepladder 6-Foot Common Hand Tools Placard, Warning	121/1 111/1	.30/LF/ .05/LF/
	Place circuit breaker in ON position and remove Warning Placard.	Hydrometer (Ethylene Glycol) Lantern, Electric Container, 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven	111/1	.05/LF/
/3 Tank, Expansion	SERVICE: Add brine solution to required level in expansion tank, using pump.	Stepladder 6-Foot Common Hand Tools	121/1	.30/LF/
	Place circuit breaker in ON position and remove Warning Placard.	Placard, Warning Hydrometer (Ethylene Glycol) Lantern, Electric Container, 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven	111/1	.05/LF/
	CHECKOUT: Check expansion tank for leaks and proper level.		121/1	.10/LF

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM LAUNCHER				
Environmental Control System, Launcher 1211.3				
/2 Heating and Ventilation Subsystem Launcher Tube	SERVICE: Lubricate bearings as required.	Kit, Lubrication Lantern, Electric Stepladder, 6-Foot	211/1	.25/LF/
/2 Emergency Subsystem	SERVICE: Lubricate damper linkage as required.	Kit, Lubrication Stepladder, 6-Foot	111/1	.15/LF/3M
/2 Control Air Subsystem	SERVICE: Lubricate the compressor and motor as required.	Common Hand Tools	111/1	.10/LF/36
	Clean air intake filter as required.	Kit, Lubrication	111/1	.10/LF/36
	Drain water from air receiver.		111/1	.10/LF/36
/2 Supply and Exhaust Air Subsystem	SERVICE: Lubricate the fan motors as required.	Common Hand Tools Kit, Lubrication	211/1	.15/LF/6M
/2 Distribution Subsystem, Cooling Air	SERVICE: Place circuit breaker in Panel in OFF position and attach Warning Placard in Conspicuous position.	Placard, Warning Stepladder, 6-Foot	111/1	.05/LF/3M
	Lubricate modulating damper linkage as required.	Common Hand Tools	211/1	.10/LF/3M
	Remove and replace air filters F-1 and F-2 as required.	Kit, Lubrication	212/1	.20/LF/3M
	Place circuit breaker in Panel in ON position and remove Warning Placard.		111/1	.05/LF/3M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LAUNCHER Fuel System, Launcher - 1405.3	CLEAN:	Common Hand Tools Container, 1-Gallon	121/1	.45/LF/.36M
	INSPECT:	Common Hand Tools Lantern, Electric	121/1	1.10/LF/36M
	REPAIR:	Common Hand Tools	121/1	.25/LF/Unk
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	121/1	.75/LF/36M
	TEST:	4001 Multimeter	121/1	.65/LF/.26054
	CHECKOUT:	Common Hand Tools	121/1	.75/LF/.22765
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance Container, 1-Gallon Placard, Warning	121/1	.34/LF/.03289
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	121/1	.50/LF/.03289

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM **Blast Dampers, LSB - 1429.3**	**NOTE:** No maintenance analysis information is available.			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
SHOCK ATTENUATION SYSTEM, LSB Shock Attenuation System, LSB - 1441.3	CLEAN:	Stepladder, 8-foot	111/1	2.00/LF/36M
	INSPECT:	Stepladder, 8-foot Level and Plumb	111/1	1.25/LF/36M
	REPAIR:	4031 Truck, Mechanical Maintenance Common Hand Tools	111/1	.30/LF/.00001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
Rack, Rail Hydraulic Pusher – 1443.3	REMOVE: Remove holding bolts and washers. Break rail loose and attach connector from crane. Remove rail from launcher apron.	4054 Crane, Truck Mounted Common Hand Tools	111/1 111/1 111/1	.50/LF .20/LF .10/LF
	HANDLE: Load rail on flatbed truck and tie down ( ) as to avoid shifting of load during transit.	4054 Crane, Truck Mounted Flatbed Truck	111/1	.30/LF
	INSTALL: Position rail and start fasteners. Draw up until tight. Sequentially tighten to specified limit with torque wrench.	4054 Crane, Truck Mounted Torque, Wrench Flatbed Truck	112/1 112/1	.50/LF .50/LF
	PROTECT: Clean surfaces before painting. Paint all surfaces that may be exposed to the environment.	Protective Coating Material Paint Brush	111/1 111/1	.20/LF .30/LF
	INSPECT: Inspect rails for cracks, loose holding bolts and chipped or cracked detents.		121/1	.20/LF

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL AND VENTILATION SYSTEMS, LCC "0" Indenture				
	TEST: Observe operation of supply fan and exhaust fan. If operation of either fan is unsatisfactory, Environmental Control System, Figure A 1212. 3 is faulted.		221/1	.10/LCC/
	Observe control air pressure. If control air pressure is unsatisfactory, Environmental Control System, Figure A 1212. 3, is faulted. If control air pressure is satisfactory, proceed to the following step.		221/1	.10/LCC/
	Observe positioning of modulating damper. If damper positioning is not satisfactory, Ventilation System, Figure A 1436. 3 is faulted. If damper positioning is satisfactory, proceed to Indenture 1 of Environmental Control System Figure A 1212. 3.		221/1	.10/LCC/
Environmental Control System, LCC Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3	CLEAN: Place circuit breakers LCC-Sub C or LCC-SRCC or LCC-SRCC/ACP, located in LCDA Panel, in OFF position and attach Warning Placard.	Cleaner, Vacuum Placard, Warning Stepladder, 6-foot	111/1	.10/LCC/3M
	Place brine chiller lock switch in OFF position.	Lantern, Electric	111/1	.05/LCC/3M
	Clean fans, motors and air compressor.		111/1	.15/LCC/3M
	Clean all gages and instruments.		111/1	.15/LCC/3M
	Place circuit breakers LCC-Sub C or LCC-SRCC or LCC-SRCC/ACP, located in LCDA Panel, in ON position and remove Warning Placard.		111/1	.10/LCC/3M
	Place brine chiller lock switch in ON position.		111/1	.05/LCC/3M
	INSPECT: Check motors, pump, fans and compressors for excessive vibration or overheating.	Common Hand Tools Lantern, Electric	111/1	.20/LCC/3M
	Inspect electrical conduits for damage or loose connections.	Stepladder, 6-foot	111/1-	.15/LCC/3M
	REPAIR: Tighten and secure loose piping connections.	Common Hand Tools	111/1	.15/LCC/
	Tighten and secure loose electrical wiring and connections.		111/1	.15/LCC/
	Tighten and secure loose components.		111/1	.15/LCC/
/2 Brine Subsystem, Chilled	SERVICE: Check sight glass for presence of bubbles while compressor is running.	Kit, Lubrication Common Hand Tools	211/1	.05/LCC/3M
	Place brine chiller key switch SW-1 in brine chiller control panel, P-1 in OFF position.	Stepladder, 6-foot Hydrometer	111/1	.05/LCC/3M
	Place key switch SW-2 in vent system control panel P-2 in OFF position.	Lantern, Electric Dispensing Pump,		
	Place brine pump, circuit breaker, CB-1 in brine chiller control panel P-1 and compressor motor circuit breaker, CB-2 in brine chiller control panel, P-1 in OFF position and attach Warning Placard in conspicuous position.	Hand Driven Placard, Warning Container, 5-Gallon Container, 1-Gallon Pump, Rotary Hand Driven	111/1	.05/LCC/3M

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub-C, LCC-SRCC, LCC-SRCC/ACP				
1212.3				
/2 Brine Subsystem, Chilled	SERVICE: (Cont.) Add lubricating oil to compressor CP-1 as required with dispensing pump.		121/1	.05/LCC/3M
	Add brine solution to required level in expansion tank ET-1 using pump, after checking with hydrometer, to determine strength of solution to be added.		111/1	.10/LCC/3M
	Remove and clean brine line strainer screen		111/1	.15/LCC/3M
	Place brine pump, and compressor motor circuit breakers in ON position and remove warning placard.		111/1	.05/LCC/3M
	Place brine chiller key switch SW-1 in ON position.		111/1	.05/LCC/3M
	Restart system, by closing key switch, SW-2, in vent system control panel.		111/1	.05/LCC/3M
/3 Tank, Expansion	SERVICE: Add brine solution to required level in expansion tank, using pump.	Stepladder, 8-foot Common Hand Tools	121/1	.30/LCC/Unk.
	Place brine pump circuit breaker in ON position and remove Warning Placard.	Placard, Warning Hydrometer Lantern, Electric Container, 5-Gallon Container, 1-Gallon Pump, Rotary, Hand Driven 4031 Truck, Mechanical Maintenance	111/1	.05/LCC/Unk.
	CHECKOUT: Check expansion tank for leaks and proper level.		121/1	.10/LCC/Unk.
/2 Distribution Subsystem, Cooling Air	SERVICE: Place circuit breakers for LCC-Sub-C and/or for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	Placard, Warning Common Hand Tools Stepladder, 6-foot	111/1	.05/LCC/3M
	Lubricate damper linkage.	Kit, Lubrication	111/1	.10/LCC/3M
	Remove and replace air filters as required.		211/1	.30/LCC/3M
	Place circuit breakers for LCC-SubC, and/or for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard.		111/1	.05/LCC/3M

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub-C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Distribution Subsystem, Cooling Air				
/3 Heater, Duct Type, Electric	**REMOVE: Place circuit breakers in LCDB Panel in OFF position and attach Warning Placard in conspicuous position.**	**Common Hand Tools**	**111/1**	**.05/LCC/**
	Remove ceiling diffuser.	**4031 Truck, Mechanical Maintenance**	**111/1**	**.20/LCC/**
	Remove mounting hardware and diffuser box from top of capsule platform roof.	**Placard, Warning**	**111/1**	**.20/LCC/**
	Disconnect electrical wiring.	**Lantern, Electric**	**111/1**	**.15/LCC/**
	Remove mounting hardware and defective duct heater.	**Stepladder, 6-foot**	**111/1**	**.30/LCC/**
	Lower defective duct heater through opening.		**111/1**	**.05/LCC/**
	Place defective item on truck.		**111/1**	**.15/LCC/**
	INSTALL: Raise replacement duct-heater into position.	**Common Hand Tools**	**111/1**	**.05/LCC/**
	Install replacement duct heater and mounting hardware.	**Lantern, Electric**	**111/1**	**.30/LCC/**
	Connect electrical wiring.	**Stepladder, 6-foot**	**111/1**	**.25/LCC/**
	Apply sealing compound and install diffuser box and mounting hardware.	**Sealing Compound**	**111/1**	**.15/LCC/**
	Remove ladder from walkway outside capsule platform door.		**111/1**	**.05/LCC/**
	Install ceiling diffuser and mounting hardware.		**111/1**	**.20/LCC/**
	Place circuit breakers in ON position and remove Warning Placard.		**111/1**	**.15/LCC/**
	CHECKOUT: Vary room thermostat setting to activate heater.		**111/1**	**.05/LCC/**
	Observe heater starts.		**111/1**	**.05/LCC/**
/3 Filter Unit				
/4 Filter, Particulate	**SERVICE: Remove and replace filter.**	**Common Hand Tools**	**111/1**	**.20/LCC/3M**
	Place defective item on truck.	**Stepladder, 6-foot.**	**111/1**	**.05/LCC/3M**
/4 Filter, Chemical	**SERVICE: Remove and replace filter.**	**Common Hand Tools**	**111/1**	**.20/LCC/12M**
	Place defective item on truck.	**Stepladder, 6-foot.**	**111/1**	**.05/LCC/12M**

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3 /2 Distribution Subsystem, Cooling Air				
/3 Panel, Alarm	TEST: For false high temperature indication: Check control air branch pressure gage at TA-1 for specified pressure indication.	Common Hand Tools	222/1	.10/LCC/
	Check control air branch pressure gage at TA-2 for specified pressure indication.		222/1	.10/LCC/
	For false low temperature indication: Check control air branch pressure gage at TA-2 for specified pressure indication.		222/1	.10/LCC/
	For false low flow alarm: Check control air exhaust pressure at FA-1.		222/1	.10/LCC/
/4 Switch, Pressure	ADJUST: Place TA-3 thermostat above 60 degrees F set point and set PE-10 to activate alarm circuit when control air pressure decreases to 3 psig.	Common Hand Tools	222/1	.05/LCC/36M
	Place TA-2 thermostat below 50 degrees F set point and set PE-11 to activate alarm circuit when control air pressure increases to 13 psig.		222/1	.05/LCC/36M
	Return TA-2 to normal operating setting.		222/1	.05/LCC/36M
/2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Pump, Centrifugal, Power Driven	SERVICE: Add mixture to required level.	Common Hand Tools Container, 5-Gallon Pump, Rotary, Hand Driven Lantern, Electric	122/1	.10/LCC/
	CHECKOUT: Check that emergency cooling system is operating and that the pump is operational.		221/1	.15/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LCSB Fuel System, LCSB - 1230.3	PURGE:	Common Hand Tools Truck, Tank Type	121/1	2.7/LCC/36M
	INSPECT:	Lantern, Electric Stepladder, 8-foot	121/1	1.0/LCC/36M
	CHECKOUT:	Bucket, 12-Quart	221/1	1.01/LCC/36M
	TEST:	Stepladder, 8-foot	221/1	1.0/LCC/.065
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance Stepladder, 8-foot	122/1	1.05/LCC/.032

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
Lift, Service, LCC - 1242.3	SERVICE:	Common Hand Tools Kit, Lubrication	111/1	.35/LCC/12M
	ADJUST:	Common Hand Tools Placard, Warning	221/1	.25/LCC/12M
	CLEAN:	3083 Compressor, Rotary Power Driven 4031 Truck, Mechanical Maintenance Gun, Cleaning, Air	221/1	2.95/LCC/36M
	INSPECT:		221/1	1.35/LCC/36M
	REPAIR:	Common Hand Tools Placard, Warning	111/1	.35/LCC/
	TEST:	Common Hand Tools 4001 Multimeter	221/1	.21/LCC/.0927
	REPAIR:			/.09195
	CHECKOUT:		222/1	1.20/LCC/.091
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning	222/1	.87/LCC/.0007
	CHECKOUT:		222/1	.27/LCC/.0007
	ADJUST:	Common Hand Tools	222/1	.27/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SYSTEM, LCSB Ventilation System, LCSB - 1390.3	CLEAN:	Common Hand Tools Stepladder, 8-foot Ladder, Extension Placard, Warning	111/1	1.10/LCC/12M
	INSPECT:	Placard, Warning Stepladder, 8-foot Ladder, Extension	111/1	.90/LCC/12M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MONITORING SYSTEM, EQUIPMENT FAULT, LCC Monitoring System, Equipment Fault, LCC - 1396.3	CLEAN:	Vacuum Cleaner Common Hand Tools Placard, Warning	222/1	.28/LCC/12M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Valve Blast, 36 inch - 1428.3	CHECKOUT: See zero indenture for ventilation safety system for detailed information.		222/1	.07/LCC
	TEST: Position equipment for usage by transfering from maintenance van to LCEB. Gain access to valve interior by removing ducting. Test switches for voltage/continuity by opening terminal box and probing terminal board connectors. Open/close valve by using control system panel with hand pump and observing pressure on gage at which components are activated to isolate faults. Replace ducting if test is satisfactory.	4001 Multimeter 1432.3 Control System, Blast Valve Stepladder Light Portable Common Hand Tools Truck, Mechanical Maintenance	121/1 121/1 221/1 121/1	.25/LCC .30/LCC .64/LCC .30/LCC
	CHECKOUT: See zero indenture of ventilation safety system.		222/1	.07/LCC
	PURGE: Prepare control system to pressurize hydraulic system by using hand pump. Purge hydraulic cylinder by installing bleeder hoses in bleed ports and pressurizing hydraulic fluid. After bleeding cap ports remove bleeding equipment from interior of valve.	1423.3 Control System, Blast Valve Bleeder hose with container. Light Portable	121/1 222/1	.05/LCC .25/LCC
/2 Actuator	REMOVE: Position maintenance equipment for usage by transfering equipment from maintenance van to LCEB. Secure control system for maintenance in valve and leave valve in closed position. Prepare actuator for removal by. Supporting with blocking & rigging. Disconnecting and removing hydraulic lines. Disconnecting and removing switch. Removing actuator attaching fasteners.	4031 Truck, Mechanical Maintenance Light Portable Common Hand Tools Block Wood 3022 Dolly Truck Step Ladder	121/1 121/1 222/1	.25/LCC .40/LCC .40/LCC
	INSTALL: Transfer actuator from maintenance van to LCEB using dolly for moving actuator. Unpackage/prepare actuator for installation and place actuator on blocking in valve tube. Install actuator by: Positioning actuator and installing attaching fasteners. Installing/connecting hydraulic tubing. Installing switch. Removing blocking & rigging. Purge and checkout valve. Replace ducting. Transfer maintenance equipment from LCED to maintenance van.	3022 Dolly Truck Block Wood Step Ladder Common Hand Tools Light Portable 4031 Truck Mechanical Maintenance.	121/1 121/1 222/1 221/1 121/1 121/1	.25/LCC .10/LCC .50/LCC .32/LCC .30/LCC .25/LCC

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM, LCC Valve Blast, 36 inch - 1428.3 /2 Switch	**REMOVE:** Remove switch by removing fastener and dis-disconnecting electrical conductors.	Light Portable Step Ladder Common Hand Tools	121/1	.05/LCC
	INSTALL: Connect electrical conductor to switch, position switch and install fastener.	Light Portable Step Ladder	121/1	.10/LCC
	Perform checkout to verify switch operation.		221/1	.07/LCC

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC)				
Control System, Blast Valve-1432.3	**VISUAL CHECK:** Check for evidence of hydraulic fluid leakage at components and fittings at Capsule and LCEB.	Lantern, Portable	221/1	.10/LCC/
	Check components for security of mounting and connectors for tightness at Capsule and LCEB.		221/1	.10/LCC/
	Check pressure gauges for proper system hydraulic and nitrogen pressures in LCEB and Capsule.		221/1	.10/LCC/
	TEST: Check for power at control panel by operating press to test lights. Refer to Figure A 1323.3 if there is no power at power panel.		221/1	.02/LCC/
	If electrical power is available to LCEB unit, test LCEF unit as described in lower indenture. If power is available to Capsule Unit, test Capsule Unit as described in lower indenture			
	Open valve to Hydraulic System pressure gage in LCEB. If pressure is not in the range of 1100 to 1450 psi, test LCEB unit. If pressure is correct, test LCEB and/or capsule unit.		221/1	.05/LCC/
	INSPECT: Inspect control system after repair for security of fasteners and connectors, evidence of hydraulic fluid leakage and completeness of repair.		222/1	.15/LCC/
	SERVICE: Shut-off hydraulic pump and de-pressurize hydraulic system.	4305 Cylinder, Valve, Compressed Gas	121/1	.10/LCC/
	Position compressed gas cylinder and adapter kit near accumulator charging fitting in LCEB.	4570 Adapter Kit Filler & Bleeder, Hydraulic System	121/1	.10/LCC/
	Connect gas cylinder and adapter kit to accumulator charging fitting.	4031 Truck, Mechanical Maintenance	122/1	.05/LCC/
	Open valves and charge accumulator to 700 psig.		222/1	.20/LCC/
	Close valves, release charging line pressure and disconnect charging equipment.		122/1	.05/LCC/
	Remove compressed gas cylinder and adapter kit from LCEB.		121/1	.10/LCC/
	Refer to Figure A 1450.3 for servicing of Capsule Accumulator			
	With hydraulic system depressurized, check fluid level in reservoir.		221/1	.05/LCC/
	Replace filter elements in hydraulic system.		122/1	.15/LCC/
	Add fluid to hydraulic reservoir if required.		121/1	.10/LCC/
/2 LCEB Unit, Control System	**TEST:** Check for power at control panel by depressing Press to test buttons on indicator lights.	1432.3 Control System, Blast Valves	221/1	.01/LCC/
	Remove power from timer by actuating switch. Check that red light goes on.	4001 Multimeter	121/1	.02/LCC/
	Actuate and hold shutoff valve to allow hand pump operation.	4319.3 Adapter Set, Connector Stop Watch	222/1	.01/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC)				
Control System, Blast Valve-1432.3 /2 LCEB Unit, Control System	**TEST:** (Cont.) Energize valve close solenoid to close blast valves. Operate valve with manual override if solenoid valve fails to operate.		222/1	.05/LCC/
	Open valve to hand pump pressure gage and operate pump until blast valves are closed as indicated by a "Closed" light. Monitor hand pump pressure.		222/1	.10/LCC/
	De-energize solenoid valve and release shutoff valve.		121/1	.01/LCC/
	Restore power to timer. Timer contacts should close after a time delay of 20 ± 1 minute. Use momentary switch to bypass timer if timer contacts fail to close.		222/1	.40/LCC/
	Actuate and hold shutoff valve to allow hand pump operation.		122/1	.01/LCC/
	Operate hand pump and monitor pressure until blast valves are opened. Check that "Not Open" light goes off.		222/1	.10/LCC/
	Release hand pump shutoff valve and shutoff pressure gage valve		121/1	.01/LCC/
	Open valve to system pressure gage and partially open valve from pressure to return line. Hydraulic pump should start at 1100 psi and shutdown at 1450 psi.		221/1	.10/LCC/
	Open circuit breakers to remove power from control panel, shutoff hydraulic pump and bleed pressure.		122/1	.10/LCC/
	REPAIR: Check that hydraulic system is depressurized and electrical power to component is shut off.	1432.3 Control System, Blast Valves	121/1	.10/LCC/
	Drain hydraulic system as required.	3022 Truck, Dolly	122/1	.20/LCC/
	Replace defective component by removing access panels, disconnecting hydraulic lines and electrical wiring and removing component mounting fasteners.	4117 Hoisting, Unit Portable Rope, Wire Common Hand Tools	122/1	.25/LCC/
	Load heavy components such as pump motor and accumulators onto dolly using hoist and wire rope.	Container and Drain Hose 4031 Truck, Mechanical Maintenance	121/1	.20/LCC/
	CHECKOUT: Remove power from timer by actuating switch. Check that red light goes on.	1432.3 Control System, Blast Valve	221/1	.01/LCC/
	Place shutoff valve in position for operation of hand pump.	Stop Watch	121/1	.01/LCC/
	Energize solenoid valve to close blast valves.		121/1	.01/LCC/
	Operate hand pump until blast valves are closed as indicated by a "Closed" light.		222/1	.10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC)				
Control System, Blast Valve-1432.3				
/2 LCEB Unit, Control System	**CHECKOUT: (Cont.)** De-energise solenoid valve and release shutoff valve.		121/1	.01/LCC/
	Restore power to timer. Check that light goes out.		221/1	.01/LCC/
	Actuate and hold shutoff valve to allow hand pump operation.		122/1	.01/LCC/
	Use momentary switch to energise relay which holds valve open solenoid in energized position.		121/1	.01/LCC/
	Operate hand pump until blast valves are opened. Check that "Not Opened" light goes off.		222/1	.10/LCC/
	Release hand pump shutoff valve.		121/1	.01/LCC/
	Remove power from timer by actuating switch. Check that red light goes on.		221/1	.01/LCC/
	Hold manual override on valve close solenoid to allow hydraulic pressure to close valve. Release when "Closed" light illuminates.		222/1	.01/LCC/
	Restore power to timer circuit. Check that red light goes off. Blast valve should open after a time delay of 20 + 1 minute.		221/1	.40/LCC/
	Open valve to system pressure gage and partially open valve from pressure to return line. Hydraulic pump should start at 1100 psi and shutdown at 1450 psi.		221/1	.10/LCC/
/2 Capsule Unit	**TEST:** Open valve to system pressure gage and check hydraulic pressure.	1432.3 Control System, Blast Valve	221/1	.01/LCC/
	Check for power by observing indicator lights and operating press to test buttons.	4001 Multimeter 4319.3 Adapter Set, Connector	221/1	.01/LCC/
	Actuate and hold shutoff valve to allow hand pump operation.		122/1	.01/LCC/
	Open valve to hand pump pressure gage.		121/1	.01/LCC/
	De-energize valve close solenoid by actuating switch.		121/1	.01/LCC/
	Operate hand pump and monitor pressure until "Closed" light comes on.		222/1	.10/LCC/
	Energize valve open circuit by returning switch to normal position. Check that red light goes off.		221/1	.01/LCC/
	Operate hand pump and monitor pressure until blast valves are opened.		222/1	.10/LCC/
	Release hand pump shutoff valve and close valve to pressure gage.		121/1	.01/LCC/
	Open circuit breakers to remove power from panel. Shutoff hydraulic pump and bleed pressure.		121/1	.10/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC)				
Control System, Blast Valve-1432.3 /2 Capsule Unit	**REPAIR: Check that hydraulic system is de-pressurized and electrical power to component is shut off.**	1432.3 Control System, Blast Valve	122/1	.10/LCC/
	Drain hydraulic system as required.	Container, Drain Hose, Hydraulic Fluid	122/1 122/1	.20/LCC/ .25/LCC/
	Replace defective component by removing access panel disconnecting hydraulic lines and electrical wiring, and removing component mounting fasteners.	4031 Truck, Mechanical Maintenance		
	CHECKOUT: Actuate and hold shutoff valve to allow hand pump operation.	1432.3 Control System, Blast Valve	122/1	.01/LCC/
	De-energize valve close solenoid by actuating switch. Check that red light goes off.		221/1	.01/LCC/
	Operate hand pump until "Closed" light comes on.		222/1	.10/LCC/
	Energize valve open circuit by returning switch to normal position. Check that red light goes off.		221/1	.01/LCC/
	Operate hand pump until blast valves are opened.		122/1	.10/LCC/
	Release hand pump shutoff valve.		121/1	.01/LCC/
	Interrupt AC power to relay and solenoid valves by actuating switch. Blast valves should close monitor indicator lights.		221/1	.01/LCC/
	Open blast valves by restoring AC power. Monitor indicator lights.		221/1	.01/LCC/
	NOTE: No maintenance analysis is available for Indentures 3 and 4 of either of the 2 Indentures.			

AFSC: 54156G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Ventilation System (LCEB) - 1436.3	**CLEAN:** **INSPECT:** **SERVICE:** **MINOR ADJUST:** **NOTE:** NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE	9		

AFSC: 941500

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Ventilation System (LCEB) - 1436.3	CLEAN: INSPECT: SERVICE: MINOR ADJUST: NOTE: NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE	2		

AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LCEB Fuel System, LCEB - 1438.3	CLEAN:	Common Hand Tools Container, 1-Gallon	121/1	.35/LCC/36M
	INSPECT:	Common Hand Tools	121/1	.90/LCC/36M
	REPAIR:	Common Hand Tools	121/1	.25/LCC/Unk.
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	211/1	1.20/LCC/36M
	TEST:	4001 Multimeter Container, 1-Gallon	221/1	.30/LCC/.02227
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance Container, 1-Gallon Placard, Warning	121/1	.21/LCC/.00331
	CHECKOUT:	Common Hand Tools	211/1	1.20/LCC/.0033

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AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
SHOCK ATTENUATION SYSTEM, LCEB Shock Attenuation System, LCEB - 1439.3	INSPECT:		111/1	.05/LCC/6M
	CLEAN:	Stepladder, 8-foot	111/1	1.50/LCC/36M
	INSPECT:	Stepladder, 8-foot Level and Plumb	121/1	1.05/LCC/36M
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance Stepladder, 8-foot	121/1	.35/LCC/.02712
	INSPECT:	Stepladder, 8-foot	111/1	.05/LCC/.02712

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AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
Blast Door Installation, LCC (Tunnel Junction) - 1440.3	CLEAN:	Common Hand Tools	121/1	1.20/LCC/24M
	INSPECT:		221/1	.70/LCC/24M
	REPAIR:	Cloth, Abrasive Common Hand Tools	222/1	.40/LCC/Unk.
	SERVICE:	Kit, Lubrication Common Hand Tools	111/1	.55/LCC/24M
	TEST:	Scale, Dial Indicating Common Hand Tools	221/1	.60/LCC/.00609
	CHECKOUT:	Scale, Dial Indicating	221/1	.25/LCC/.00609
	REPAIR:	Cloth, Abrasive Common Hand Tools	222/1	.50/LCC/Unk.
	CHECKOUT:	Scale, Dial Indicating	221/1	.25/LCC/Unk.

AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Accumulator Set, 24-Inch Blast Valve Control - 1450.3	NOTE: NO MAINTENANCE ANALYSIS INFORMATION IN AVAILABLE.			

POSITION DEFINITION

POSITION NO. 13	POSITION TITLE Electrician/Electrical Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 54250G/70G

GENERAL FEATURES

POSITION SUMMARY:

The Electrician/Electrical Technician is responsible for maintenance at the Support Base of electrical power source and distribution system components returned from Launch Facilities and Launch Control Facilities. He also provides assistance on an "as required" basis to the Electro-Mechanical Team for detailed troubleshooting and repair of the electrical power system at the Launch Facilities and Launch Control Facilities.

His duties and tasks include tests to isolate faults to a removable sub-unit, repair by replacing faulty units, and the organizational and field maintenance of such equipment as:

1209.3	Water Control and Removal System, Elec. Components	R
1242.3	Service Lift, Launch Control Facility	R
1246.3	Cable Assembly Set, Launch Control	R
1248.3	Launcher Intra-Site Cabling	R
1283	Motor Generator	
1284	Power Supply Group	
1289	Power Supply Group, LCC	
1323.3	Electrical Systems, LCC	R
1329.3	Electrical System, Launcher	R
1337.2	Junction-Box, Main, Launch Facility	
1367.2	Motor Generator	
1379.2	Battery Charger Alarm Set Group	

POSITION DEFINITION

POSITION NO. 13

POSITION TITLE: Electrician/Electrical Technician

RECOMMENDED OR AUTHORIZED AFSC: AFSC 54250G/70G

POSITION SUMMARY: (Cont.)

1380	60 Cycle Power Panel
1385	Junction Box, Power and Communication - LCC
1389.3	Heating and Ventilating System, LSB
1396.3	Monitoring System, Equipment
1415	Fixture, Emergency Lighting andAlarm
4024	Semi-Trailer, G&C Re-Entry Vehicle
4043	Elevator Work Cage
4059	Transporter-Erector Semi-Trailer (Electrical Components)
4119	Truck, Transporter-Erector Support
4451	Controller, Power Azimuth Drive

Checkout, testing and maintaining will be accomplished, using Electrical Power Test Equipment, Battery Chargers, and Standard Electrical Test Equipment.

ENVIRONMENT:

Work Location: The Electrician/Electrical Technician's primary duty location is the Maintenance Branch-Mechanical Section at the Support Base and at Launch Facilities and Launch Control Facilities when serving as a member of the Electro-Mechanical Team.

Linss of Supervision: At the Support Base he is supervised by the Missile Officer, AFSC 3124G. When acting as a member of the Electro-Mechanical Team, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G.

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POSITION DEFINITION

POSITION NO.	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
13	Electrician/Electrical Technician	AFSC 54250G/70G

QUALIFICATIONS:

The duties and tasks of the Electrician/Electrical Technician involve low to medium perceptual, judgmental and motor skills.

Task performance is generally critical to subsystem operation.

RELATION TO EXISTING AIR FORCE SPECIALTIES:

This position type falls within the scope of AFS Electrician/Electrical Technician, AFSC 54250G/70G.

AFSC: 94258G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ELECTRICAL SYSTEM, LCC Electrical System, LCC (Hard) 1323.3	CLEAN:		Common Hand Tools Cleaner, Vacuum	111/1	3.75/LCC/12M
	INSPECT:		Common Hand Tools	222/1	2.50/LCC/12M
	REPAIR:		Common Hand Tools Placard, Warning	222/1	.08/LCC/
	CHECKOUT:	4001	Multimeter	222/1	.25/LCC/
	TEST:		Common Hand Tools	222/1	.14/LCC/1.625
	REPAIR:	4031	Common Hand Tools Truck, Mechanical Maintenance	222/1	.62/LCC/.0002
	CHECKOUT:	4001	Common Hand Tools Multimeter	222/1	.50/LCC/.0002

AFSC: 54250G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MONITORING SYSTEM, EQUIPMENT FAULT, LCC Monitoring System, Equipment Fault, LCC - 1396.3	INSPECT:	Lantern, Electric	222/1	.20/LCC/12M
	REPAIR:	Placard, Warning Lantern, Electric	222/1	.36/LCC/Unk
	TEST:	Common Hand Tools 4001 Multimeter	222/1	.22/LCC/.0028c
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance	222/1	.15/LCC/.0000
	CHECKOUT:	Common Hand Tools	222/1	.16/LCC/.0000

AFSC: 54250Q

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ELECTRICAL SYSTEM, LCSB Electrical System, LCSB - 1437.3	CLEAN:	Common Hand Tools Vacuum Cleaner Extension Cord, 50 foot Stepladder, 8-foot	222/1	3.90/LCC/12M
	INSPECT:	Common Hand Tools Stepladder, 8-foot	222/1	4.35/LCC/12M
	REPAIR:	Common Hand Tools Placard, Warning	222/1	.10/LCC/Unk
	CHECKOUT:	4001 Multimeter	222/1	.10/LCC/Unk
	TEST:	Common Hand Tools Stepladder, 8-foot Placard, Warning 4001 Multimeter	222/1	.19/LCC/3.95240
	REPAIR:	Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Stepladder, 8-foot	222/1	.62/LCC/.00012
	CHECKOUT:	Common Hand Tools 4001 Multimeter	222/1	.10/LCC/.00012

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC)				
Control System, Blast Valve-1432.3				
/2 LCEB Unit, Control System	**TEST:** Open access cover on terminal box and make a point to point continuity check using a multimeter.	1432.3 Control System, Blast Valves	222/1	.30/LCC/
	Disconnect electrical connectors at solenoid valves and check continuity using connector adapter set and multimeter.	4001 Multimeter	222/1	.10/LCC/
	Fault isolate to replaceable component from above tests.	4319.3 Adapter Set, Connector Stop Watch	221/1	.20/LCC/
/2 Capsule Unit	**TEST:** Open access cover on terminal box and make a point to point continuitychec k using multimeter.	1432.3 Control System, Blast Valve	222/1	.20/LCC/
	Disconnect electrical connectors at solenoid valves and check continuity using connector adapter set and multimeter.	4001 Multimeter	222/1	.15/LCC/
	Fault isolate to replaceable component from above tests.	4319.3 Adapter Set, Connector	121/1	.20/LCC/

4.9

POSITION DEFINITION

POSITION NO. 15	POSITION TITLE Refrigeration Specialist/Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 54550Y/70Y

GENERAL FEATURES

POSITION SUMMARY:

The Refrigeration Specialist/Technician is responsible for Support maintenance of the following: Environmental Control and Equipment Cooling components returned from Launch Facilities and Launch Control Facilities, Maintenance Ground Equipment Cooling Units used at the Support Base, and Transporter-Erector Environmental Control System components. He also provides back-up assistance on an "as required" basis to the Electro-Mechanical Team.

His duties and tasks include tests to isolate faults to a removable sub-unit, repair by replacing faulty units, and organizational and field maintenance of equipment such as:

603.2	Environmental System, C24 (Missile Targeting Set)	
1211.3	Environmental System, Launch Facility	R
1212.3	Environmental System, Launch Control Facility	R
1214	Cooling Unit, Guidance and Control Compartment	
1318	Guidance and Control Cooling Plumbing Set	
3035	Test Set, Cooling Liquid, Guidance and Control	
4024	Environmental System, R/V-G&C Van	
4059	Environmental System, Transporter-Erector	
4075	Environmental System, Transporter-Erector	
4115	Environmental Control, Auxiliary	
4150	Test Bench, Guidance and Control Ground Cooling	
4191	Tank, Liquid Storage, Metal	

POSITION DEFINITION

POSITION NO. 15

POSITION TITLE
Refrigeration Specialist/Technician

RECOMMENDED OR AUTHORIZED AFSC
AFSC 54550Y/70Y

POSITION SUMMARY: (Cont.)

1390.3 Ventilation System, LCSB R

1436.3 Ventilation System, LCEB R

Checkout and testing is accomplished using such equipment as a Multimeter, Refrigeration Repair Kit, Thermometer, Air Flow meters, and hand tools.

ENVIRONMENT:

Work Location: The Refrigeration Specialist/Technician's primary duty is at the Maintenance Branch-Mechanical Section at the Support Base and at Launch Facilities and Launch Control Facilities when required as a member of the Electro-Mechanical Team.

Lines of Supervision: At the Support Base he is supervised by the Missile Officer, AFSC 3124G. When acting as a member of Electro-Mechanical Team, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G.

QUALIFICATIONS:

The duties and responsibilities of the Refrigeration Specialist/Technician require medium perceptual and motor skills; and high to medium judgmental skill in fault isolating and testing functions.

Task performance is generally critical to subsystem operation.

RELATION TO EXISTING AIR FORCE SPECIALTIES:

The duties of this position fall within the scope of AFS Refrigeration Specialist/Technician, AFSC 54550Y/70Y.

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER *Environmental Control System, Launcher - 1211.3*				
	TEST: Check pressure gage for 15 psig supply from control air compressor.	Common Hand Tools Meter, Air Velocity	121/1	.05/LF/
	Check cooling airflow rate to electronic equipment racks, using air velocity meter.	Thermometer Set, Self-Indicating, Liquid in Glass	121/1	.10/LF/
	Test airflow rate to launcher tube, using airve locity meter at fan S-3 inlet.		221/1	.10/LF/
	Check brine supply temperature at chiller CH-1		221/1	.05/LF/
	Check temperature of air at cooling coil CC-1 discharge.		221/1	.05/LF/
	Check temperature of air at fan S-4 discharge.		221/1	.05/LF/
	CHECKOUT: Check emergency subsystem temperature and rate of air flow to electronic equipment for specified reading.	Thermometer Set, Self-Indicating, Liquid in Glass	221/1	.20/LF/
	When brine chiller key switch SW-1 in panel P-1 and key switch SW-2 in vent system control panel P-2 are placed in ON position, observe starting sequence, using stop watch.	Meter, Air Velocity Stopwatch	221/1	.15/LF/
	Emergency subsystem is shut down and dampers D3, D4 and D4 reverse position.	Stepladder, 6 foot	221/1	.05/LF/
	After the system is allowed to operate for 1/2 hour, check:		221/1	.50/LF/
	Brine temperature at chiller CH-1 outlet for specified reading.		221/1	.05/LF/
	Air compressor pressure gage for specified reading.		221/1	.05/LF/
	Airflow rate to electronic equipment for specified indication.		221/1	.05/LF/
	Airflow rate to launcher tube for specified indication.		221/1	.05/LF/

AFSC: 54558Y

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 Brine Subsystem, Chilled	TEST: Brine Chiller Operating.			
	Check pressure indicators at brine circulating pump BP-1 inlet and discharge for proper indications.	4001 Multimeter	221/1	.05/LF/
	Check refrigerant flow for bubbles through sight glass.		211/1	.05/LF/
	Check temperature gage at chiller CH-1 outlet for specified brine temperature reading.		111/1	.05/LF/
	Check level of brine in expansion tank, ET-1.		121/1	.05/LF/
	Brine Chiller Not Operating.			
	Check circuit breaker No. 7 on LDA Panel for ON position.		111/1	.05/LF/
	Check brine pump circuit breaker CB-1 for ON position.		111/1	.05/LF/
	Check refrigerant compressor circuit breaker CB-2 for ON position.		111/1	.05/LF/
	Check for 120 vac across key switch SW-1 in panel P-1, and key switch SW-2 in panel P-2.		221/1	.05/LF/
	Check for 120 vac across the following switches: Oil Pressure cutout (OPCO) SW-3 (CEG-87851). Low temperature cutout (LTCO) SW-4. High and low pressure cutouts (HPCO-LPCO) SW-5.		221/1	.15/LF/
	REPAIR: Place circuit breaker No. 7 in LDA Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1	.05/LF/
	Place brine chiller key switch SW-1, in panel P-1, and vent system control switch SW-2, in panel P-2 in OFF position and attach Warning Placard in conspicuous position.		111/1	.05/LF/
	Remove and replace following defective items as required:			
	Gate, plug and check valves.		221/1	.20/LF/
	Sediment strainer.		221/1	.20/LF/
	Quick-disconnect coupling.		221/1	.20/LF/
	Rubber hose assembly.		221/1	.20/LF/
	Pipe and associated fittings.		221/1	.20/LF/
	Compressor muffler.		222/1	.75/LF/
	Heat exchanger.		222/1	.75/LF/
	Wiring.		221/1	.75/LF/
	Place circuit breaker, brine chiller, and vent system key switches in ON position and remove Warning Placard.		111/1	.05/LF/
	Place defective item on truck.		111/1	.05/LF/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER *Environmental Control System, Launcher - 1211.3* /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating	CHECKOUT: Refer to Environmental Control System, Launcher, Line 6, Checkout, Step d (1).			221/1	.55/LF/
	TEST: Chiller operating.				
	Check brine pump BP-1 (MBG-85086) suction and discharge pressures.		Common Hand Tools	111/1	.05/LF/5.43
	Check brine temperatures at inlet and outlet to chiller CH-1.	4001	*Multimeter*, AN/PSM-6	111/1	.05/LF/5.43
	Check refrigerant compressor CP-1 (CRG-85000) suction and discharge *pressures*.		Detector, Air Leak	111/1	.05/LF/5.43
	Check damper D-2 (CRG-85066) opening for proper airflow.		Thermometer, Self-Indicating Liquid in Glass	111/1	.05/LF/5.43
	Check flow of refrigerant through sight glass.	3039	Leak Detector, Refrigerant Gas	111/1	.05/LF/5.43
	Check power distribution lines for proper voltage.			111/1	.05/LF/5.43
	Check condenser coil CC-2 (CRG-85609) for clogging.			211/1	.05/LF/5.43
	Chiller not operating.				
	Check circuit breakers No. 5 and No. 7 in LDA Panel for ON position.			111/1	.05/LF/5.43
	Check brine chiller key switch SW-1, in panel P-1, for ON position.			111/1	.05/LF/5.43
	Check compressor and brine pump motor circuit breakers (CB-1, and CB-2 in panel P-1) *for* ON position.			111/1	.05/LF/5.43
	Check for 120 vac across fuse.			221/1	.05/LF/5.43
	Check for 120 vac across motor starter overload heaters.			221/1	.05/LF/5.43
	Check for power continuity across brine pump motor starter ST-1 (MEL-85155) and compressor motor starter ST-2 in panel P-1.			221/1	.05/LF/5.43
	Check that LTCO SW-4, LPCO-HPCO SW-5, and OPCO SW-3 switches are in closed position in panel P-1.			221/1	.10/LF/5.43
	Check that relays R-1 and R-2 are energized.			221/1	.10/LF/5.43
	Check that solenoid valve PNV-2 operates in panel P-1			221/1	.10/LF/5.43
	Check brine level in expansion tank ET-1 (CBG-85227).			111/1	.05/LF/5.43
	Check that brine pump BP-1 (MBG-85086) operates.			111/1	.05/LF/5.43
	Check that compressor CP-1 (CRG-85000) operates.			111/1	.05/LF/5.43
	Check for air, brine and refirgerant leaks.			111/1	.05/LF/5.43

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTRC'. SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating	**REPAIR:** Place circuit breaker No. 7 in LDA Panel and brine chiller key switch SW-1 in panel P-1 in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance	111/1	.05/LF/.1264
	Remove and replace following defective items as required:			
	Flexible connection.		111/1	.15/LF/.1264
	Pressure gage.		111/1	.15/LF/.1264
	Drain valve.		111/1	.15/LF/.1264
	Place circuit breaker and brine chiller key switch SW-1 in panel P-1 in ON position and remove Warning Placard.		111/1	.05/LF/.1264
	Place defective item on truck.			/LF/.1264
	SERVICE: Refer to Brine Subsystem, Chilled, Line 5 Service, Steps a thru c.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance Hydrometer (Ethylene Glycol) Lantern, Electric Container 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven Stepladder, 6-Foot	111/1	.40/LF/.1264
	CHECKOUT: Check circuit breakers CB-1 and CB-2 in brine chiller control panel P-1 for ON position.	Common Hand Tools	111/1	.05/LF/.1264
	Place chiller key switch SW-1 in Panel to ON position and observe starting sequence of brine pump BP-1 and compressor CP-1 motors.		111/1	.05/LF/.1264
	Check brine pump BR-1 suction and discharge pressure gages for proper pressure readings.		111/1	.05/LF/.1264
	Check compressor CP-1 suction and discharge pressure gages for proper pressure readings.		111/1	.05/LF/.1264
	Check brine line valves for required open or closed position.		111/1	.05/LF/.1264
	Check brine temperature at chiller outlet for specified reading.		111/1	.05/LF/.1264
	REMOVE: Place circuit breaker No. 5 and No. 7 in LDA Panel in OFF position and attach Warning Placard.	Common Hand Tools Placard, Warning	111/1	.05/LF/2.090
	Place chiller key switch SW-1 in chiller control panel, P-1 in OFF position.		111/1	.05/LF/2.090
	Uncouple quick-disconnect fittings for brine supply and return lines.		111/1	.20/LF/2.090
	Disconnect inlet and discharge air ducts from brine chiller.		111/1	.20/LF/2.090

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating	**REMOVE:** Disconnect air lines to brine Chiller Control Panel, P-1.			111/1	.10/LF/2.09
	Disconnect electrical wiring.			221/1	.10/LF/2.09
	Remove brine chiller mounting hardware.			111/1	.10/LF/2.09
	HANDLE: Remove Launcher Support Building roof access cover above brine chiller.		Common Hand Tools Sling Set	111/1	.20/LF/2.09
	Attach hoist sling to brine chiller hoisting shackles.	4054	Crane, Truck-mounted	111/1	.10/LF/2.09
	Lift brine chiller, using truck hoist, through access cover and place brine chiller on ground.			221/1	.25/LF/2.09
	Attach sling to replacement brine chiller and lower into position in Launcher Support Building.		Semi-Trailer, Low Bed, Type XM-269 Truck, Tractor	111/1	.10/LF/2.09
	Remove sling and replace roof access cover.			111/1	.10/LF/2.09
	Attach sling to defective brine chiller, hoist on to low bed semi-trailer and secure.			111/1	.15/LF/2.09
	INSTALL: Install brine chiller mounting hardware.		Common Hand Tools	111/1	.15/LF/2.09
	Connect inlet and discharge air ducts.			111/1	.50/LF/2.09
	Connect electrical wiring.			221/1	.20/LF/2.09
	Connect supply and return lines to brine chiller.			111/1	.20/LF/2.09
	Connect air lines to brine chiller control panel P-1.			111/1	.20/LF/2.09
	SERVICE: Refer to Brine Subsystem, Chilled, Line 5 Service, Steps a thru c.		Common Hand Tools Stepladder, 6-Foot Truck, Mechanical Maintenance Placard, Warning Hydrometer (Ethylene Glycol) Lantern, Electric Container 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven	111/1	.40/LF/2.09
	CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 5, Checkout, Steps a thru f.		Common Hand Tools	111/1	.30/LF/2.09
	ADJUST: Perform the following: (1) Adjust PE-3 (MPL-85235) until refrigerant compressor starts as specified.			222/1	.10/LF/2.09

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating /4 Damper Set, Modulating	ADJUST: Adjust pressure controller PC-1 for specified refrigerant condensing pressure.	Stop Watch 4031 Truck, Mechanical Maintenance	222/1	.20/LF/2.09
	Adjust high-low pressure cutout SW-5 for proper setting.	Common Hand Tools	222/1	.15/LF/2.09
	REPAIR: Close off control air supply to PC-1 in Brine Chiller Control Panel P-1.	Common Hand Tools 4031 Truck, Mechanical Maintenance	221/1	.10/LF/
	Disconnect linkage, air line and remove mounting hardware.		221/1	.25/LF/
	Remove and replace defective operator.		221/1	.10/LF/
	Install mounting hardware, connect linkage and air line.		221/1	.20/LF/
	Open control air valve.		221/1	.05/LF/
	CHECKOUT: Observe damper operation when air supply to PC-1 is closed off.		221/1	.10/LF/
	ADJUST: Adjust linkage for proper positioning of damper.	Common Hand Tools	221/1	.20/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Brine Subsystem Chilled /3 Chiller, Brine Refrigerating /- Pump, Centrifugal, Power Driven	REMOVE: Place pump motor circuit breaker CB-1 (MGE-85237-1) in Panel P-1 in OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring. Disconnect piping from pump and remove mounting hardware.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance	221/1 221/1 111/1	.05/LF/ .10/LF/ .20/LF/
	INSTALL: Install mounting hardware. Connect piping and electrical wiring. Place pump motor circuit breaker in ON position and remove Warning Placard.	Common Hand Tools	111/1 111/1 221/1	.10/LF/ .30/LF/ .05/LF/
	SERVICE: Refer to Brine Subsystem, Chilled, Line 5, Service, Steps a thru c.	Lantern, Electric Container 5 gallon (Two) Container 1 gallon Pump, Rotary, Hand Driven Stepladder 6 Foot Placard, Warning Hydrometer (Ethylene Glycol)	121/1	.40/LF/
	CHECKOUT: Refer to Environmental Control System, Launcher, Line 6, Checkout, Steps b thru d.	Common Hand Tools	221/1	.90/LF/
/4 Panel, Brine, Chiller Control	TEST: Refrigeration not functioning. (a) Check circuit breakers No. 5 and No. 7 in LDA Panel and key switch SW-1 in Chiller Control Panel for ON position. (b) Check reset levers for ON position. (c) Check for 110 vac across fuse. (d) Check circuit continuity through thermal overload heater fuse. (e) Check LTCO, SW-4 or HPCO SW-5 and OPCO SW-3 switches for closed position. (f) Check solenoid valve PNV-2 for open position. (g) Check brine pump, BP-1 and refrigerating compressor CP-1 for operational status. Brine not circulating. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps a thru d, and f. Air not flowing. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps d thru g. Temperature or pressures not indicating. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps a thru g.	Common Hand Tools 4001 Multimeter Detector Air Leak Thermometer, Self-Indicating, Liquid in Glass Leak Detector, Refrigerant Gas	111/1 111/1 221/1 221/1 222/1 222/1 111/1 222/1 222/1 222/1	.05/LF/ .05/LF/ .10/LF/ .05/LF/ .20/LF/ .05/LF/ .10/LF/ .25/LF/ .60/LF/ .60/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating /4 Panel, Brine, Chiller Control	REPAIR: Disconnect power and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LF/
	Remove and replace following defective items as required.	4031	Truck, Mechanical Maintenance		
	(1) Fuse.		Placard, Warning	111/1	.10/LF/
	(2) Circuit breaker.			221/1	.35/LF/
	(3) Key switch.			221/1	.35/LF/
	(4) Solenoid valve, PNV-2.			221/1	.40/LF/
	(5) Fluid flow restrictor R-1.			111/1	.30/LF/
	(6) Pressure switch.			221/1	.55/LF/
	(7) Thermostatic switch.			221/1	.55/LF/
	(8) Pressure gage.			111/1	.30/LF/
	(9) Thermometer.			111/1	.30/LF/
	(10) Plug valve.			111/1	.30/LF/
	(11) Pressure regulator.				
	Restore power and remove Warning Placard.			111/1	.05/LF/
	Place defective item on truck.			111/1	.05/LF/
	CHECKOUT: Place circuit breakers No. 5 and No. 7 in LDA Panel and key switch SW-1 in Chiller Control Panel in ON position.		Stop Watch	111/1	.05/LF/
	Refer to Environmental Control System, Launcher Line 6, Checkout, Steps b and d.			221/1	.65/LF/
	Observe replacement thermometer and/or pressure gages for indication of working pressures.			221/1	.10/LF/
/5 Starter, Motor	REPAIR: Place circuit breaker No. 7 in LDA Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LF/
	Remove and replace following defective items as required.	4031	Truck, Mechanical Maintenance		
	(1) Thermal overload element and place defective itme on truck.		Placard, Warning	221/1	.20/LF/
	Restore power and remove Warning Placard.			111/1	.05/LF/
	CHECKOUT: Place motor starter in ON position.			111/1	.05/LF/
	Check that refrigerant compressor or brine pump motor starts.			111/1	.05/LF/
	REMOVE: Open circuit breaker No. 7 in Panel LDA and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LF/
	Disconnect wiring and remove mounting hardware.	4031	Truck, Mechanical Maintenance	221/1	.10/LF/
	Remove defective starter.			221/1	.05/LF/
	Place defective item on truck.		Placard, Warning	111/1	.05/LF/
	Use lantern to facilitate removal.		Lantern, Electric		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER	INSTALL: Connect wiring and install mounting hardware.		Common Hand Tools	221/1	.12/LF/
Environmental Control System, Launcher 1211.3	Place circuit breaker No. 7 in Panel LDA in ON position and remove Warning Placard.		Lantern, Electric	221/1	.05/LF/
/2 Brine Subsystem, Chilled	Use lantern to facilitate installation.				
/3 Chiller, Brine Refrigerating	CHECKOUT: Refer to Starter, Motor, Line 2, Checkout, Steps a and b.			111/1	.10/LF/
/4 Panel, Brine, Chiller Control					
/5 Starter, Motor					
/5 Switch, Pressure	ADJUST: Manually adjust pressure switches to activate within the respective pressure/time delay ranges using stopwatch.		Common Hand Tools Stopwatch	222/1	.20/LF/36M
	REMOVE: Open circuit breaker No. 7 in Panel LDA and attach Warning Placard in conspicuous position.		Placard, Warning Common Hand Tools	111/1	.05/LF/
	Shut off air at line valve closest to pressure switch involved.	4031	Truck, Mechanical	111/1	.01/LF/
	Disconnect pressure switch wiring and tubing, remove switch		Maintenance	121/1	.20/LF/
	Place defective item on truck.			111/1	.05/LF/
	INSTALL: Install replacement switch.		Common Hand Tools	221/1	.05/LF/
	Connect electrical wiring and tubing.			121/1	.20/LF/
	Reactivate circuit by opening air line shutoff valves.			221/1	.10/LF/
	Close circuit breaker No. 7 in LDA Panel and remove Warning Placard.			111/1	.05/LF/
	CHECKOUT: Check that switches operate.			111/1	.05/LF/
	ADJUST: Manually adjust pressure switch to activate within the respective pressure/time delay ranges, using stop watch.		Common Hand Tools Stop Watch	222/1	.20/LF/
/5 Regulator, Pressure	ADJUST: Note condensing pressure and change pressure regulator setting to this pressure.		Common Hand Tools	221/1	.05/LF/36M
	Check branch air pressure for approximately 7-1/2 psig.			221/1	.05/LF/36M
	Reset to 157 psig.			221/1	.05/LF/36M
	REMOVE: Close instrument air supply valve.		Common Hand Tools	111/1	.01/LF/
	Disconnect control air lines.	4031	Truck, Mechanical	221/1	.05/LF/
	Remove pressure regulator.		Maintenance	111/1	.05/LF/
	Place defective item on truck.			111/1	.05/LF/
	INSTALL: Install new pressure regulator.		Common Hand Tools	111/1	.10/LF/
	Connect control air lines.			221/1	.05/LF/
	CHECKOUT: Check for air leaks at pressure regulator connections.		Common Hand Tools	111/1	.05/LF/
	Check that pressure regulator operates dampers by varying controls.		Detector, Airleak	111/1	.05/LF/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME/ PLACE/ FREQUENCY
/5 Regulator, Pressure (Cont.)	**ADJUST:** Adjust pressure regulator to specified setting.		221/1	.05/LF/
/3 Tank, Expansion	**REPAIR:** Place brine pump circuit breaker CB-1 in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning	111/1	.05/LF/
	Remove and replace following defective items as required.	4031 Truck, Mechanical Maintenance		
	(1) Safety relief valve.		111/1	.20/LF/
	(2) Gate valve.		111/1	.20/LF/
	Place defective item on truck.		111/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air	**TEST: High temperature alarm.** (a) If fan S-4 is not operating, check the following:		Meter, Air Velocity Thermometer Set, Self-Indicating, Liquid in Glass	211/1	.05/LF/3.587
	(1) Circuit breaker in Panel for ON position.	4557	Gage Set, Pressure, Dial Indicating, GMU-38/E	221/1	.10/LF/3.587
	(2) For 120 vac at pressure switch PE-4 with multimeter.	4001	Multimeter, AN/PSM-6	221/1	.15/LF/3.587
	(3) Control air pressure for 15 psig at PE-4.		Stepladder, 6-Foot	211/1	.05/LF/3.587
	(b) Using air velocity meter, check airflow downstream from the following points if fan S-4 is operating.		Detector, Air Leak	211/1	.05/LF/3.587
	(1) Damper D-7			211/1	.05/LF/3.587
	(2) Filter F-2			211/1	.05/LF/3.587
	(3) Damper D-9			211/1	.05/LF/3.587
	(4) Cooling coil face and by-pass damper D-5.			221/1	.05/LF/3.587
	(5) Cooling coil CC-1.			221/1	.05/LF/3.587
	(6) Damper D-8			221/1	.05/LF/3.587
	(7) Damper D-4			221/1	.10/LF/3.587
	(c) Check cooling coil CC-1 air leaving temperature with thermometer set.			211/1	.05/LF/3.587
	(d) Visually check temperature and pressure indicators on duct.			221/1	.10/LF/3.587
	(e) Check pressure switches PE-7 thru PE-9 in panel P-5			221/1	.10/LF/3.587
	(f) Check the following alarm sensing control setting and performance.			221/1	.15/LF/3.587
	(1) TA-1 in Panel P-6 high, 44 deg F.			221/1	.15/LF/3.587
	(2) TA-2 in Panel P-6 high, 60 deg F; low, 50 deg F.			221/1	.10/LF/3.587
	(g) Check discharge thermostat TC-1 in Panel P-6 setting and performance. Set at 55 ± 2 deg F.			221/1	.75/LF/3.587
	(h) Check performance of solenoid valve PNV-1 in Panel P-5.				
	(j) Check damper operator D.O. -5				
	High-Low temperature alarm. Refer to Distribution Subsystem Cooling Air, Line 2, Test, Condition No. 1, Steps b(1) thru b(4) and b(7), c, d, f(2) and g.				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER	**TEST: Low airflow**				
Environmental Control System, Launcher 1211.3	(a) Refer to Distribution Subsystem, Cooling Air, Line 2, Test, Condition No. 1, steps b(1) thru b(7) and f(2).			221/1	.45/LF/3.587
/2 Distribution Subsystem, Cooling Air	(b) Check the following control settings and performance.				
	(1) PE-6 for control air availability and 120 vac at leads.			221/1	.15/LF/3.587
	(2) FA-1 for control air availability.			221/1	.10/LF/3.587
	(3) Pitot tube leads to FA-1 for air leaks using air leak detector.			221/1	.10/LF/3.587
	REPAIR: Place circuit breaker Panel in OFF position and attach Warning Placard in conspicuous position.		Placard, Warning	111/1	.05/LF/.0023
			Stepladder 6-Foot		
	Remove and replace defective wiring.		Common Hand Tools	221/1	.50/LF/.0023
	Place circuit breaker in ON position and remove Warning Placard.	4031	Truck, Mechanical Maintenance	111/1	.05/LF/.0023
	Place defective item on truck and secure.			111/1	.05/LF/.0023
	CHECKOUT: Check system operation by placing brine chiller key switch in ON position and observing start of supply fan.			221/1	.10/LF/.0023
/3 Air Conditioner	TEST: Low airflow alarm.	4001	Multimeter		
	(a) Check for 208 vac at fan S-4 motor terminals.			221/1	.10/LF/1.1479
	REPAIR: Place circuit breaker Panel in OFF position and attach Warning Placard in conspicuous position.	5031	Truck, Mechanical Maintenance	111/1	.05/LF/.03415
	Remove and replace following defective items as required:		Placard, Warning		
	(1) Flexible connection, using stepladder as required.		Stepladder 6-Foot	211/1	.50/LF/.03415
	(2) Pressure gage.		Common Hand Tools	211/1	.10/LF/.03415
	(3) Thermometer.			211/1	.05/LF/.03415
	Restore power and remove Warning Placard.			111/1	.05/LF/.03415
	Place defective item on truck.			111/1	.05/LF/.03415
	CHECKOUT: Check the following:				
	(a) Flexible connections for air tightness.			121/1	.05/LF/.0341
	(b) Pressure gage or thermometer for indicating reading.			121/1	.05/LF/.0341

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMELTAL CONTROL SYSTEM, LAUNCHER					
Environmental Control System.	REMOVE: Place circuit b reaker No. in Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LF/.9370
Launcher - 1211.3	Tag and disconnect wiring at motor.			221/1	.10/LF/.9370
/2 Distribution Subsystem, Cooling Air	Disconnect ducts and flexible connections.			111/1	.20/LF/.9370
/3 Air Conditioner	Remove mounting hardware.			111/1	.20/LF/.9370
/4 Fan, Centrifugal, Power Driven	INSTALL: Replace fan mounting hardware.		Common Hand Tools	211/1	.20/LF/.9370
	Connect ductwork and flexible connections.			211/1	.20/LF/.9370
	Connect wiring to motor.			221/1	.10/LF/.9370
	Place circuit breaker No. in Panel in ON position and remove Warning Placard.			111/1	.05/LF/.9370
	CHECKOUT: Refer to Cooling Air Distribution Subsystem, Line 2, Test, Condition No. 1, Steps a (1) thru a (3).			221/1	.30/LF/.9370
	Check that fan S-4 operates when pressure switch PE-4 is actuated through chiller brine pump BP-1, motor-starter, ST-1.			211/1	.05/LF/.9370
/4 Damper Set, Modulating, D-5	REPAIR: Remove and replace the following defective item:		Common Hand Tools		
	(1) Piston damper operator.	4031	Truck, Mechanical Maintenance		
	(a) Open circuit breaker No. in Panel and attach Warning Placard in conspicuous position.		Placard, Warning	111/1	.05/LF/.1253
	(b) Disconnect air piping and linkage.			211/1	.30/LF/.1253
	(c) Remove and replace defective item.			211/1	.25/LF/.1253
	Place defective item on truck.			111/1	.05/LF/.1253
	Close circuit breaker No. in Panel and remove Warning Placard.			111/1	.05/LF/.1253
	CHECKOUT: Check damper D-5 activation when solenoid air valve PNV-1 is actuated through fan S-5 motor starter, ST-1 in Panel P-5.			211/1	.10/LF/.1253
	ADJUST: With test thermometer and air velocity meter in supply duct, adjust damper linkage to modulate in the required range.		Command Hand Tools Thermometer Set, Self-Indicating, Liquid in Glass Meter, Air Velocity Stepladder, 6-Foot	222/1	.30/LF/.1253
/3 Panel, Air Conditioner Control P-5	TEST: High air temperature		Common Hand Tools	111/1	.05/LF/.1905
	Check circuit breakers No. 5 and No. 7 in LDA Panel for ON position.	4001	Multimeter, AN/PSM -6		
	Check continuity across fuse with multimeter.		Meter, Air Velocity	221/1	.10/LF/.1905
	Check circuit breaker CB-1 in Panel P-5 for ON position.		Detector, Air Velocity	221/1	.10/LF/.1905
	Check continuity across radio interference filters.			221/1	.05/LF/.1905

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Air Conditioner Control, P-5	**TEST:** Check control air supply with pressure gage set.	4557 Gage, Set, Pressure Dial Indicating GMU-38/E Thermometer Set, Self Indicating, Liquid-IN-Glass	221/1	.10/LF/.1905
	Check for control air line leaks.		221/1	.05/LF/.1905
	Check for open contacts in pressure switch PE-9 (CEF-90300).		221/1	.05/LF/.1905
	High-Low air temperature.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru f.		221/1	.40/LF/.1905
	Check for open contacts in pressure switch PE-7 (CEF-90300).		221/1	.05/LF/.1905
	Check for open contract in pressure switch PE-8 (CEF-90300).		221/1	.05/LF/.1905
	Supply fan S-4 not operating.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru e.		221/1	.35/LF/.1905
	Check for closed contacts in pressure switch PE-4 (CEF-90300		221/1	.05/LF/.1905
	Damper D-5 not operating.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru f.		221/1	.40/LF/.1905
	Check that solenoid valve PNV-1 (CEG-90317) operates.		221/1	.10/LF/.1905
	High or low Launcher temperature.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru f.		221/1	.40/LF/.1905
	Check for closed contacts in pressure switch PE-11 (CEF-90300) and for open contacts in pressure switch PE-10(CEF-90300).		221/1	.10/LF/.1905
	Low airflow in air conditioner.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru f.		221/1	.40/LF/.1905
	Check for closed contacts in pressure switch PE-6 (CEF-90300		221/1	.05/LF/.1905
	Low airflow to fan S-3.			
	Refer to Panel, Air Conditioner Control, Line 1, Test, Steps a thru f.		221/1	.40/LF/.1905
	Check for closed contacts in pressure switch PE-12 (CEF-90300).		221/1	.05/LF/.1905
	REPAIR: Place circuit breakers No. 5 and No. 7 in LDA Panel in OFF position and attach Warning Placard in conspicuous position.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning.	111/1	.05/LF/.1903
	Remove and replace following defective items as required:			
	(a) Fuse		221/1	.10/LF/.1903
	(b) Circuit breaker.		222/1	.10/LF/.1903
	(c) Solenoid valve, PNV-1.		222/1	.10/LF/.1903
	(d) Radio interference filter.		221/1	.10/LF/.1903
	(e) Place defective item on truck.		111/1	.05/LF/.1903
	(f) Place circuit breakers No. 5 and No. 7 in LDA Panel in ON position and remove Warning Placard.		111/1	.05/LF/.1903

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Air Conditioner Control, P-5	CHECKOUT: Place key switch SW-1 in Brine Chiller Control Panel P-1 in ON position and check the following: (1) Air conditioner unit AC-1 fan motor starts. (2) PNV-1 solenoid valve operates to pass air to TC-1 (CEF-90307).			111/1 111/1 111/1	.05/LF/.1903 .05/LF/.1903 .05/LF/.1903
/4 Starter, Fan Motor ST-1	REPAIR: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: (a) Overload heater. (b) Restore power and remove Warning Placard.	4031	Placard, Warning Common Hand Tools Truck, Mechanical Maintenance	211/1 221/1 111/1	.05/LF/.0004 .10/LF/.0004 .10/LF/.0004
	CHECKOUT: Place starter in ON position and observe that motor starts.			221/1	.05/LF/.0004
	REMOVE: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring. Remove mounting hardware. Remove defective motor starter. Place defective item on truck.	4031	Placard, Warning Truck, Mechanical Maintenance Common Hand Tools	111/1 221/1 211/1 111/1 111/1	.05/LF/.0004 .10/LF/.0004 .10/LF/.0004 .05/LF/.0004 .05/LF/.0004
	INSTALL: Install replacement motor starter and mounting hardware. Connect wiring, restore power and remove Warning Placard.		Placard, Warning Common Hand Tools	221/1 222/1	.20/LF/.0004 .10/LF/.0004
	CHECKOUT: Place starter in ON position and observe that motor starts.			221/1	.05/LF/.0004
/4 Switch, Pressure, PE-4, PE-6 thru PE-12	ADJUST: Use thermostat tool kit to adjust pressure switch set points as follows: (a) PE-4 set point at full line pressure (15 psig). (b) PE-6 set through FA-1 (CEF-90313) to 1670 cfm. (c) PE-7 set through TA-2 (CEF-90310) to 60 deg F. (d) PE-8 set through TA-2 to 50 deg F. (e) PE-9 set through TA-1 (CEJ-90429) to 44 deg F. (f) PE-10 set through TA-4 (CEF-90306) to 80 deg F. (g) PE-11 set through TA-4 to 60 deg F. (h) PE-12 set through FA-2 (CEF-90313) to 900 cfm.		Common Hand Tools Tool Kit, Thermostat Adjustment and Repair	221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1	.10/LF/36M .10/LF/36M .10/LF/36M .10/LF/36M .10/LF/36M .10/LF/36M .10/LF/36M .10/LF/36M
	REMOVE: Place circuit breakers No. 5 and No. 7 in LDA Panel in OFF position and attach Warning Placard in conspicuous position. Tag and disconnect wiring.	4031	Truck, Mechanical Maintenance Placard, Warning Common Hand Tools	111/1 221/1	.05/LF/.0001 .10/LF/.0001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Air Conditioner Control, P-5 /4 Switch, Pressure, PE-4, PE-6 through PE-12	**REMOVE:** Disconnect control air piping. Remove mounting hardware and defective pressure switch. Place defective item on truck.		211/1 111/1 111/1	.15/LF/.0001 .10/LF/.0001 .05/LF/.0001
	INSTALL: Install replacement pressure switch and mounting hardware.	Common Hand Tools	221/1	.10/LF/.0001
	Connect control air piping. Connect wiring. Place circuit breakers No. 5 and No. 7 in LDA Panel in ON position and remove Warning Placard.		221/1 221/1 221/1	.15/LF/.0001 .15/LF/.0001 .05/LF/.0001
	CHECKOUT: Check the replacement pressure switch by moving the switch set points and observing the action of the controlled equipment.		211/1	.10/LF/.0001
	ADJUST: Refer to Switch, Pressure, Line 10, Adjust, Steps a(1) thru a(8).	Stop Watch Common Hand Tools Tool Kit, Thermostat Adjustment and Repair.	221/1	.80/LF/.0001
/3 Panel, Alarm Sensor, P-6	**TEST:** High or low temperature mixed air discharge. Observe temperature at duct indicators and check TA-2 for alarm actuation when settings are moved beyond control set points.	Common Hand Tools Meter, Air Velocity	221/1	.10/LF/.0237
	High cooling coil discharge temperature. Observe temperature at cooling coil discharge and check TA-1 for actuation when setting is moved beyond control set points.		221/1	.10/LF/.0237
	Low mixed air discharge flow rate. Using velocity meter, measure airflow and check FA-1 for alarm actuation when setting is moved beyond control set points.		221/1	.10/LF/.0237
	High or low temperature in Launcher Tube. Observe Launcher Tube temperature and check TA-4 for actuation when setting is moved beyond control set points.		221/1	.10/LF/.0237
	Low airflow to Launcher Tube. Using velocity meter, measure airflow and check FA-2 for alarm actuation when setting is moved beyond control set point.		221/1	.10/LF/.0237
	Low airflow switchover. Using velocity meter, measure airflow and check FA-4 for actuation of PE-25 when setting is moved beyond control set point.		221/1	.10/LF/.0237

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Alarm Sensor /4 Controller, Airflow	CALIBRATE: Install adapter kit to controller.	Common Hand Tools	221/1	.10/LF/36M
	Observe differential pressure readings.	Tool Kit, Thermostat	222/1	.15/LF/36M
	Perform comparison check, using master gage to check system alarm flow controller.	Adjustment and Repair gage, Differential	222/1	.40/LF/36M
	Set controller to calibration data, adjusting dial set point as required.	Pressure, Dial Indicating	222/1	.10/LF/36M
	Remove master gage.		211/1	.05/LF/36M
	Mark position of damper setting; close damper to determine if alarm actuates, then reset damper.		221/1	.10/LF/36M
	REMOVE: Place circuit breaker in Panel in OFF position and attach Warning Placard in conspicuous position.		111/1	.05/LF/.0002
	Disconnect control air piping.		221/1	.20/LF/.0002
	Remove mounting hardware and defective airflow controller.		111/1	.05/LF/.0002
	Place defective item on truck.		111/1	.05/LF/.0002
	INSTALL: Install replacement controller and mounting hardware.	Common Hand Tools	221/1	.10/LF/.0002
	Connect control air piping.		221/1	.20/LF/.0002
	Place circuit breaker in ON position and remove Warning Placard.		111/1	.05/LF/.0002
	CHECKOUT: Check for alarm actuation when low airflow is indicated.		221/1	.10/LF/.0002
	ADJUST: Adjust FA-1 to actuate low flow alarm when below 1670 cfm.	Common Hand Tools	222/1	.30/LF/.0002
	Adjust FA-2 to actuate low flow alarm when below 900 cfm.		222/1	.30/LF/.0002
	Adjust FA-4 to actuate PE-25 when airflow is below 930 cfm.		222/1	.30/LF/.0002

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Alarm Sensor /4 Thermostat, Remote Bulb	CALIBRATE: Perform comparison check of master thermometer with system thermostat.		Common Hand Tools Tool Kit, Thermostat Adjustment and Repair Thermometer Set, Self-Indicating, Liquid in Glass	222/1	.10/LF/36M
	Perform calibration to required setting.			222/1	.10/LF/36M
	Remove master kit and adapters.			211/1	.10/LF/36M
	REPAIR: Remove and replace following defective items as required:	4031	Truck, Mechanical Maintenance		
	Gage.			221/1	.05/LF/.0140
	Place defective item on truck.			111/1	.05/LF/.0140
	CHECKOUT: Check for pressure indication.			221/1	.05/LF/.0140
	REMOVE: Place circuit breaker in Panel in OFF position and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Truck, Mechanical Maintenance	111/1	.05/LF/.0234
	Disconnect control air piping.			221/1	.10/LF/.0234
	Remove mounting hardware and defective unit.		Placard, Warning	211/1	.10/LF/.0234
	Place defective item on truck.			111/1	.05/LF/.0234
	INSTALL: Install replacement unit and mounting hardware.		Common Hand Tools	222/1	.15/LF/.0234
	Connect control air piping.			221/1	.10/LF/.0234
	Place circuit breaker in Panel in ON position and remove Warning Placard.			111/1	.05/LF/.0234
	CHECKOUT: Check alarm actuation when thermostat setting is removed beyond set point.			222/1	.05/LF/.0234
	Check damper operation when temperature controller setting is moved beyond set point.			222/1	.05/LF/.0234
	ADJUST: Install adapter kit to controller.			121/1	.10/LF/.0234
	Observe comparison readings and adjust system thermostat.			222/1	.10/LF/.0234
	Adjust to specified readings.			211/1	.10/LF/.0234
	Disconnect and remove adpater kit.			211/1	.10/LF/.0234

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Subsystem, Launcher Tube	TEST: Too high temperature				
	(1) Check thermostat for proper setting	4001	Multimeter.	111/1	.05/LF/
	(2) Check that linkage on pneumatic operator of Variac unit operates freely.		Meter, Air Velocity Lantern, Electric	221/1	.05/LF/
	Too low temperature.				
	(1) Check heating coil for operation.		Thermometer, Self-Indicating, Liquid in Glass.	111/1	.05/LF/
	(2) Check if damper is open.			111/1	.05/LF/
	(3) Test circuit breakers, switches and relays for 120 vac.			221/1	.20/LF/
	Low flow of air.				
	(1) Check if damper is open.			111/1	.10/LF/
	(2) Test circuit breakers, switches and relays for 120 vac.			221/1	.20/LF/
	(3) Test flow of air from fan with velocity meter for specified requirement.			221/1	.10/LF/
	No flow of air.				
	(1) Check circuit breaker in Panel for ON position.			111/1	.05/LF/
	(2) Check circuit breaker and switch in control panel for 120. vac.			111/1	.05/LF/
	(3) Check for 120 vac across fan.			221/1	.05/LF/
	(4) Check for 120 vac across control relay.			221/1	.05/LF/
	(5) Check if damper is open.			111/1	.05/LF/
	(6) Check settings of TC-4 and TC-5			111/1	.05/LF/
	REPAIR: Open circuit breaker in Panel and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Truck, Mechanical Maintenance	111/1	.05/LF/
	a. Remove and replace following defective items as required:				
	(1) Flexible hose.		Lantern, Electric	111/1	.10/LF/
	(2) Air duct hose.		Placard, Warning	111/1	.50/LF/
	b. Place defective item on truck.			111/1	.05/LF/
	CHECKOUT: Close circuit breaker in Panel and remove Warning Placard.		Meter, Air Velocity	111/1	.05/LF/
	Using air velocity meter check fan discharge for 1000 cfm.			121/1	.25/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER	**CHECKOUT:** Check louvers on damper D-6 for open position.		Thermometer, Self Indicating Liquid in Glass	211/1	.10/LF/
Environmental Control System, Launcher 1211.3	Check Launcher Tube temperature with thermometer.			111/1	.15/LF/
/2 Heating and Ventilation Subsystem, Launcher Tube	**ADJUST:** Adjust remote bulb thermostat TC-4 for a setting of 62 deg F minimum.			221/1	.05/LF/
	Adjust remote bulb thermostat TC-5 for a setting of 73.8 deg F maximum.		Common Hand Tools Lantern, Electric	221/1	.05/LF/
/3 Heater, Space, Electric	**REPAIR:** Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Stepladder, 6-Foot Lantern, Electric	111/1	.05/LF/
	Remove and replace following defective items as required:				
	(a) Impeller.		Placard, Warning	221/1	.25/LF/
	(b) Alternating-current motor.	4031	Truck, Mechanical Maintenance	221/1	.25/LF/
	(c) Heating element, electrical.			221/1	.25/LF/
	Place defective item on truck.			111/1	.10/LF/
	CHECKOUT: Place circuit breaker No. in Panel OFF position and remove Warning Placard.		Meter, Air Velocity Lantern, Electric	111/1	.05/LF/
	Turn switch SW-6 in Panel, P-3, to ON position.		Stepladder, 6-Foot	111/1	.05/LF/
	Check that motor and fan are operating without excessive vibration.			111/1	.05/LF/
	Check that heating coil heats up.			111/1	.25/LF/
	Using air velocity meter check S-3 discharge for 1000 cfm.			121/1	.25/LF/
	Check louvers on D-6 for open position.			211/1	.10/LF/
/3 Panel, Launch Tube Heater P-3	TEST: Check pressure gage for 15 psig control air supply through solenoid valve PNV-4, (CEG-90317).		Common Hand Tools Lantern, Electric	221/1	.05/LF/
	Vary thermostat setting on TC-4 and check pressure gage for output air to pressure selecting valve C-3 (CPJ-90317)	4001	Multimeter	221/1	.05/LF/
	Vary thermostat setting on TC-5 and check pressure gage for output air to pressure selecting valve C-3.			221/1	.05/LF/
	Vary thermostat setting on HL-1 (CEJ-90302) and check pressure gage for output air to pressure selecting valve C-3.			221/1	.05/LF/
	During the preceding Steps b, c and d, check that the pneumatic piston operator actuates the heater control unit.			221/1	.15/LF/
	Check for 120 vac, 60 cycles across terminals of solenoid valve PNV-4(CEG-90317).			121/1	.10/LF/
	Check for 208 vac across input terminals of variable transformer of the Variac control unit.			221/1	.05/LF/
	Check for 208 vac across output terminals of the variable transformer of the Variac control unit.			221/1	.05/LF/
	Return thermostat settings of TC-4, TC-5 and HL-1 to original settings.			221/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Sub-System, Launcher Tube /3 Panel, Launch Tube Heater P-3	REPAIR: Place circuit breaker No. in Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: (1) Control relay R-1. (2) Circuit breaker . (3) Duplex pressure selector DPS-1. (4) Solenoid valve PNV-4. (5) Radio interference filter. Place defective item on truck.		Common Hand Tools Lantern, Electric Placard, Warning 4031 Truck, Mechanical Maintenance	111/1 221/1 221/1 221/1 221/1 221/1 111/1	.05/LF/ .20/LF/ .20/LF/ .20/LF/ .20/LF/ .20/LF/ .10/LF/
	CHECKOUT: Place circuit breaker No. in Panel to ON position and remove Warning Placard. Place circuit breaker in launch tube heater panel, P-3, to ON position. Adjust thermostat setting to actuate fan and heater coil. Check that fan starts, before heating coil. Return thermostat to original setting.			111/1 111/1 221/1 211/1 221/1	.05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/
/4 Starter, Motor, MEJ-85163	REPAIR: Place circuit breaker in launch tube heater panel, P-3, to OFF position and attach Warning Placard in conspicuout position. Remove and replace following defective items as required. (1) Overload heater. Place circuit breaker in launch tube heater panel, P-3, in ON position and remove Warning Placard.		Common Hand Tools Lantern, Electric Placard, Warning	111/1 221/1 111/1	.05/LF/ .25/LF/ .05/LF/
	CHECKOUT: Place motor starter in ON position. Check that fan motor starts.			111/1 111/1	.05/LF/ .05/LF/
	REMOVE: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item on truck.		Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Lantern, Electric	111/1 221/1 111/1 111/1	.05/LF/ .20/LF/ .05/LF/ .05/LF/
	INSTALL: Connect electrical wiring and install mounting hardware. Place circuit breaker No. in Panel in ON position and remove Warning Placard. Place motor starter in ON position.		Common Hand Tools Lantern, Electric	221/1 111/1 111/1	.20/LF/ .05/LF/ .05/LF/
	CHECKOUT: Refer to Motor Starter, Line 2, Checkout, Steps a and b.			111/1	.10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Subsystem, Launcher Tube /3 Panel, Launch Tube Heater P-3 /4 Modulator, Heater, HMD-1	**REPAIR:** Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required. (1) Pneumatic piston operator/positioner.	Common Hand Tools Lantern, Electric Placard, Warning	111/1 221/1	.05/LF/ .25/LF/
	CHECKOUT: Place circuit breaker No. in Panel to ON position and remove Warning Placard. Refer to Panel, Launch Tube Heater, P-3, TEST., the first five duties and the last duty. Check for leaks in the pneumatic lines and fittings.	Common Hand Tools Lantern, Electric	111/1 221/1 111/1	.05/LF/ .40/LF/ .10/LF/
	ADJUST: Adjust pneumatic piston operator linkage for proper movement.	Common Hand Tools Lantern, Electric	221/1	.10/LF/
/5 Heater Modulator, Variac	**REMOVE:** Place circuit breaker No. in Panel to OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring and actuating linkage. Remove mounting hardware and defective unit. Place defective item on truck.	Common Hand Tools 4031 Truck, Mechanical Maintenance Lantern, Electric Placard, Warning	111/1 221/1 111/1 111/1	.05/LF/ .15/LF/ .15/LF/ .05/LF/
	INSTALL: Install replacement unit and mounting hardware Reconnect electrical wiring and actuating linkage. Place circuit breaker No. in Panel to ON and remove Warning Placard.	Common Hand Tools Lantern, Electric	121/1 221/1 111/1	.15/LF/ .15/LF/ .05/LF/
	CHECKOUT: Refer to Panel Launch Tube Heater, TEST, the first two steps.		111/1	.10/LF/
	ADJUST: Adjust pneumatic piston operator linkage for proper movement.	Common Hand Tools Lantern, Electric	221/1	.10/LF/
/4 Thermostat, Remote Bulb	**CALIBRATE:** Install adapters and master thermometer set to system. Perform comparison check of master thermostat with system thermostats. Disconnect Kit.	Common Hand Tools Tool Kit, Thermostat Adjustment and Repair Thermometer set, Self-Indicating, Liquid in Glass	222/1 222/1 222/1 222/1	.20/LF/36M .20/LF/36M .20/LF/36M .20/LF/36M
	REPAIR: Remove and replace the defective pressure gage. Place defective item on truck.	Common Hand Tools 4031 Truck, Mechanical Maintenance	221/1 111/1	.15/LF/ .05/LF/
	CHECKOUT: Check for gage reading.		221/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER	**REMOVE:** Place circuit breaker in panel in OFF position.	Common Hand Tools	111/1	05/LF/
Environmental Control System, Launcher 1211.3	Disconnect pneumatic lines and cap	4031 Truck, Mechanical	221/1	10/LF/
/2 Heating and Ventilation Subsystem, Launcher Tube	Remove mounting hardware and defective thermostat.	Maintenance	221/1	.15/LF/
/3 Panel, Launch Tube Heater P-3	Place defective item on truck	Lantern, Electric	111/1	.05/LF/
/4 Thermostat, Remote Bulb	Use lantern to facilitate removal.			
	INSTALL: Install mounting hardware and replacement thermostat.	Common Hand Tools Lantern, Electric	221/1	.15/LF/
	Connect Pneumatic lines.		211/1	.10/LF/
	Place circuit breaker in Panel in ON position.		111/1	.05/LF/
	Check pneumatic tubing and fittings for leaks.		111/1	.10/LF/
	Use lantern to facilitate installation.			
	CHECKOUT: Vary thermostat setting.	Lantern, Electric	121/1	.05/LF/
	Observe branch air pressure reading.	Common Hand Tools	221/1	.05/LF/
	Observe piston operator actuates.		221/1	.05/LF/
	ADJUST: Return thermostat setting to specified operational setting.	Common Hand Tools Lantern, Electric	221/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Emergency Subsystem.	**CHECKOUT:** Open circuit breakers No. 5 and No. 7 on the LDA Power Distribution Panel to simulate a power failure.	Meter, Air Velocity Stepladder 6-Foot	111/1	.05/LF/
	After loss of normal and standby power, check the following:		211/1	.10/LF/
	(1) D-4 damper closed.			
	(2) D-3 damper open.			
	(3) S-2 fan operating.			
	(4) D-6 damper closed.			
	Check airflow to electronic equipment, using the air velocity meter and ladder.		211/1	.10/LF/
	Close circuit breakers No. 5 and No. 7.		111/1	.05/LF/
	TEST: Fan not operating.			
	(a) Place circuit breaker Panel in OFF position. Attach Warning Placard in conspicuous position.	Common Hand Tools Multimeter AN/ PSM-6 Placard, Warning	111/1	.05/LF/
	(b) Check manual lock switch SW-7 in emergency fan panel, P-4 for ON position.		111/1	.05/LF/
	(c) Test for 28 vdc across fuse with multimeter.		221/1	.10/LF/
	(d) Check for circuit continuity through:			
	(1) D-C contractor.		221/1	.10/LF/
	(2) Overload relay.		221/1	.10/LF/
	(3) Radio interference filter.		221/1	.10/LF/
	(4) Pressure switch PE-5.		221/1	.10/LF/
	(e) Test for 28 VAC across fan S-2 motor.		221/1	.10/LF/
	Low airflow:			
	(a) Check for no control air pressure to dampers, D-3, D-4 and D-6.		221/1	.10/LF/
	(b) Check general condition of damper operator and linkage.		221/1	.10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER					
Environmental Control System, Launcher 1211.3					
/2 Emergency Subsystem	**REPAIR:** Disconnect power to emergency fan panel, P-4 and attach Warning Placard in conspicuous position		Common Hand Tools	211/1	.05/LF/
	Remove and replace following defective items as required.	4031	Truck, Mechanical Maintenance		
	Wiring.		Placard, Warning	221/1	.20/LF/
	Place defective item on truck.			111/1	.05/LF/
	Restore power to panel and remove warning placard.			211/1	.05/LF/
	CHECKOUT: Check that fan S-2 activates when control air supply is shut off.			211/1	.05/LF/
/3 Fan, Axial, Power Driven	**REMOVE:** Disconnect power to emergency fan control panel P-4 and attach Warning Placard in conspicuous position.		Common Hand Tools	211/1	.05/LF/
		4031	Truck, Mechanical Maintenance	211/1	.05/LF/
	Disconnect wiring.		Placard, Warning	111/1	.20/LF/
	Remove duct connecting hardware from flanged ends of fan.		Stepladder, 6-foot	111/1	.10/LF/
	Remove mounting hardware and defective fan.			111/1	.10/LF/
	Place defective item on truck.				
	INSTALL: Install replacement fan.		Placard, Warning	211/1	.10/LF/
	Install duct connecting hardware.		Stepladder, 6-foot	111/1	.25/LF/
	Connect wiring.		Common Hand Tools	211/1	.10/LF/
	Restore power and remove Warning Placard.			211/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Emergency Subsystem /3 Damper Set Modulating	**REPAIR:** Remove and replace the pneumatic piston operator. Place defective item on truck.	4031	Truck, Mechanical Maintenance Stepladder, 6-foot Common Hand Tools	221/1 111/1	.40/LF/ .05/LF/
	CHECKOUT: Check the following damper positions when control supply air is not available to emergency subsystem:		Stepladder, 6-foot		
	D-4 is closed.			221/1	.10/LF/
	D-3 is open.			221/1	.10/LF/
	D-6 is closed.			221/1	.10/LF/
	Use stepladder to facilitate checkout.				
	ADJUST: Adjust damper linkage as required		Common Hand Tools Stepladder, 6-foot	221/1	.10/LF/
/3 Panel, Emergency Fan	**REPAIR:** Disconnect DC power to panel P-4 and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LF/
	Remove and replace the following defective items as required:	4031	Truck, Mechanical Maintenance		
	Fuse.		Placard, Warning	221/1	.10/LF/
	DC contactor			221/1	.30/LF/
	Overload relay.			221/1	.30/LF/
	Selector switch.			221/1	.20/LF/
	Radio interference filter.			221/1	.50/LF/
	Pressure switch.			221/1	.30/LF/
	Restore power to panel P-4 and remove Warning Placard.			111/1	.05/LF/
	Place defective item on truck.			111/1	.10/LF/
	CHECKOUT: Check manual lock switch SW-7 for ON position.			111/1	.05/LF/
	Place circuit breaker in panel in OFF position and check that fan S-2 operates.			221/1	.05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER **Environmental Control System, Launcher - 1211.3** **/2 Control Air Subsystem**	**TEST: Insufficient or no air pressure:**		**Common Hand Tools**		
	Check subsystem for obvious damage.	4001	Multimeter	221/1	.10/LF/
	Check compressor manual starter switch for ON position.		Placard, Warning	111/1	.05/LF/
	Check relief valve for closed position.			121/1	.05/LF/
	Use multimeter to check 208 VAC across starter switch overload relay.			221/1	.05/LF/
	Check 208 VAC across starter switch.			221/1	.05/LF/
	Check 208 VAC across motor terminals.			221/1	.05/LF/
	Check air intake filter and check valve for functional integrity.			121/1	.05/LF/
	Check pressure reducing valve PRV-1 integrity by observing:				
	Inlet pressure gage reading for approximately 50 psig.			121/1	.05/LF/
	Outlet pressure gage reading for approximately 15 psig			121/1	.05/LF/
	Check seperator air filter for functional integrity.				
	Excessive air pressure:				
	Check pressure reducing valve PRV-1 for operation.			121/1	.05/LF/
	Check relief valve for operation.			121/1	.05/LF/
	Check unloader for operation.			121/1	.05/LF/
	REPAIR: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position.		**Common Hand Tools**	111/1	.05/LF/
	Remove and replace following defective items as required:	4031	Truck, Mechanical Maintenance		
	Pressure relief valve.		Placard, Warning	221/1	.10/LF/
	Pressure reducing valve.			221/1	.10/LF/
	Pressure gage.			221/1	.10/LF/
	Motor starter overload relay.			221/1	.10/LF/
	Pipe and associated fittings.			221/1	1.0/LF/
	Electrical wiring.			221/1	1.0/LF/
	Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard.			111/1	.05/LF/
	CHECKOUT: Start compressor.			111/1	.05/LF/
	Refer to Control Air Subsystem, TEST.			121/1	.10/LF/
	Check subsystem for air leaks.			221/1	.10/LF/
	ADJUST: Adjust pressure reducing valve PRV-1 to specified requirements.		**Common Hand Tools**	221/1	.10/LF/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER				
Environmental Control System, Launcher - 1211.3				
/2 Control Air Subsystem				
/3 Compressor Unit, Air	**REPAIR: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position.**	**Common Hand Tools**	**111/1**	**.05/LF/**
	Remove and replace following defective items as required:	**4031 Truck, Mechanical Maintenance**		
	Flow control valve.	**Placard, Warning**	**121/1**	**.25/LF/**
	Check valve.		**121/1**	**.25/LF/**
	Air unloader assembly.		**121/1**	**.10/LF/**
	Air intake filter.		**121/1**	**.10/LF/**
	Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard.		**111/1**	**.05/LF/**
	CHECKOUT: Start compressor.		**111/1**	**.05/LF/**
	Check for discharge pressure of approximately 50 psig.		**111/1**	**.05/LF/**
	Check subsystem for air leaks.		**111/1**	**.10/LF/**
/4 Compressor, Power Driven	**REMOVE: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position.**	**Common Hand Tools Placard, Warning**	**111/1**	**.05/LF/**
	Disconnect electrical wiring.		**221/1**	**.10/LF/**
	Disconnect piping.		**122/1**	**.10/LF/**
	Remove mounting hardware.		**122/1**	**.10/LF/**
	INSTALL: Attach mounting hardware.	**Common Hand Tools**	**211/1**	**.20/LF/**
	Connect piping and reconnect electrical wiring.		**221/1**	**.20/LF/**
	Place circuit breaker No. 5 in LDA Panel to ON position and remove warning placard.		**111/1**	**.05/LF/**
	CHECKOUT: Start compressor.		**111/1**	**.05/LF/**
	Check for discharge pressure of 50 psig.		**111/1**	**.05/LF/**
/4 Starter, Motor	***REPAIR: Place circuit breaker No. 5 in LDA Panel in OFF position and attach warning placard in conspicuous position.***	***Common Hand Tools*** **Lantern, Electric**	**111/1**	**.05/LF/**
	Remove and replace defective overload heater as required.	**Placard, Warning**	**221/1**	**.25/LF/**
	Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard.	**4031 Truck, Mechanical Maintenance**		
	CHECKOUT: Place motor starter in ON position.		**111/1**	**.05/LF/**
	Check that fan motor starts.		**111/1**	**.05/LF/**

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER **Environmental Control System, Launcher - 1211.3** **/2 Control Air Subsystem** **/3 Compressor Unit, Air** **/4 Starter, Motor**	**REMOVE: Place circuit breaker No. 5 in LDA Panel in OFF position and attach warning placard inconspicuous position.**		**Common Hand Tools** **Placard, Warning**	**111/1**	**.05/LF/**
	Remove mounting hardware and disconnect electrical wiring.		**Lantern, Electric**	**221/1**	**.20/LF/**
	Remove defective motor starter.	**4031**	**Truck, Mechanical Maintenance**	**111/1**	**.05/LF/**
	Place defective item on truck.			**111/1**	**.10/LF/**
	INSTALL: Connect electrical wiring and install mounting hardware.		**Common Hand Tools** **Lantern, Electric**	**221/1**	**.20/LF/**
	Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard.			**111/1**	**.05/LF/**
	CHECKOUT: Place motor starter in ON position.			**111/1**	**.05/LF/**
	Check that compressor motor starts.			**111/1**	**.05/LF/**
/2 Supply and Exhaust Air Subsystem					
	TEST: Check for 208 VAC at S-1 fan motor terminals.	**4001**	**Multimeter**	**221/1**	**.10/LF/**
	Check for 208 VAC at E-1 fan motor terminals.			**221/1**	**.10/LF/**
	Check operation of modulating dampers.			**221/1**	**.10/LF/**
	REPAIR: Place circuit breakers in OFF position and attach warning placard in conspicuous position.	**4031**	**Truck, Mechanical Maintenance**	**111/1**	**.05/LF/**
	Remove and replace following defective items as required:		**Placard, Warning**		
	Flexible duct.		**Common Hand Tools**	**111/1**	**.30/LF/**
	Damper operator.		**Stepladder, 6-foot**	**211/1**	**.55/LF/**
	Close circuit breaker and remove warning placard.			**111/1**	**.05/LF/**
	Place defective item on truck.			**111/1**	**.05/LF/**
	CHECKOUT: Check the following:				
	Supply and exhaust fans for operation.			**221/1**	**.10/LF/**
	Modulating damper set for satisfactory positioning.			**221/1**	**.20/LF/**
	Flexible duct for air tightness.			**111/1**	**.05/LF/**
	ADJUST: Adjust linkage for proper positioning of damper.		**Common Hand Tools**	**221/1**	**.20/LF/**

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER **Environmental Control System, Launcher 1211.3** **/2 Supply and Exhaust Air Subsystem**				
/3 Fan, Supply and Exhaust	**REMOVE:** *Disconnect power to control panel and attach Warning Placard in conspicuous position.*	Common Hand Tools	111/1	.05/LF/
	Disconnect wiring.	4031 Truck, Mechanical Maintenance	221/1	.10/LF/
	Remove duct connecting hardware from flanged ends of fan.	Placard, Warning	111/1	.20/LF/
	Remove mounting hardware and defective fan.	0121 Truck, Hand Elevating Platform	111/1	.20/LF/
	INSTALL: Attach mounting hardware	Common Hand Tools	221/1	.20/LF/
	Attach duct to flanged ends of fan with duct connecting hardware		211/1	.20/LF/
	Connect wiring to fan motor.		211/1	.10/LF/
	Connect wiring to control panel and remove Warning Placard.		211/1	.05/LF/
	CHECKOUT: Check key operated manual switch in control panel for ON position.		111/1	.05/LF/
	Check that fan operates.		111/1	.05/LF/
/3 Damper Set, Modulating	**REPAIR:** Remove and replace defective pneumatic piston operator.	4031 Truck, Mechanical Maintenance	221/1	.40/LF/
	Place defective item on truck.	Common Hand Tools	111/1	.05/LF/
	CHECKOUT: Check the damper position when the chiller is *operating.*		221/1	.20/LF/
	ADJUST: Adjust damper linkage as required.	Common Hand Tools	221/1	.10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER **Environmental Control System, Launcher 1211.3** **/2 Supply and Exhaust Air Subsystem** **/3 Panel, Control, Ventilation**	**REPAIR: Place circuit breakers for LCC-Sub C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.**	4031	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1	.05/LF/
	Remove and replace following defective items as required:				
	Fuse.			221/1	.05/LF/
	Circuit breaker.			221/1	.30/LF/
	Control relay			221/1	.30/LF/
	Pneumatic electric relay.			221/1	.30/LF/
	Temperature controller			221/1	.30/LF/
	Static pressure regulator.			221/1	.30/LF/
	Rectifier.			221/1	.30/LF/
	Stepper switch.			221/1	.30/LF/
	Time delay relay.			221/1	.30/LF/
	Push button switch.			221/1	.30/LF/
	Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard.			211/1	.05/LF/
	Place defective item on truck.			111/1	.05/LF/
	CHECKOUT: Check fuse and circuit breakers by observing that fans start.			221/1	.05/LF/
	Check stepper, pneumatic electric relays and time delay. relays by observing proper restart attempts and starting sequences.			221/1	.50/LF/
	Check pneumatic controls by observing proper temperature control.			221/1	.50/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Supply and Exhaust Air Subsystem /3 Panel, Control, Ventilation /4 Starter, Motor	REPAIR: Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1	.05/LF/
	Remove and replace defective heater.			221/1	.05/LF/
	Restore power and remove Warning Placard.			111/1	.05/LF/
	Place defective item on truck.			111/1	.05/LF/
	CHECKOUT: Check that fan operates with switches in ON position.			211/1	.05/LF/
	REMOVE: Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	211/1	.05/LF/
	Disconnect wiring.			221/1	.05/LF/
	Remove mounting hardware.			111/1	.05/LF/
	Remove defective starter.			111/1	.05/LF/
	Place defective item on truck.			111/1	.05/LF/
	INSTALL: Replace defective starter.		Common Hand Tools	111/1	.05/LF/
	Replace mounting hardware.			111/1	.05/LF/
	Connect wiring.			221/1	.10/LF/
	Restore power and remove Warning Placard.			211/1	.05/LF/
	CHECKOUT: Check that fan operates when switches are placed in ON position.			221/1	.10/LF/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3	TEST: With a high temperature alarm:	Common Hand Tools		
	Check temperature of air at cooling coil discharge with thermometer.	Meter, Air Velocity Thermometer Set, Self-Indicating Liquid in Glass	221/1	.05/LCC/
	Check brine supply temperature at chiller outlet with thermometer.		221/1	.05/LCC/
	With low flow rate alarm:			
	Check cooling air flow rate to electronic equipment racks using air velocity meter.		221/1	.10/LCC/
	With low and high temperature alarm:			
	Perform all steps above.		221/1	.20/LCC/
	Check temperature of air at fan discharge with thermometer		221/1	.05/LCC/
	CHECKOUT: Place instrument air compressor circuit breaker in ON position.	Meter, Air Velocity Thermometer Set, Self-Indicating Liquid in Glass	111/1	.05/LCC/
	Place circuit breakers in ON position for LCC-Sub C.		111/1	.05/LCC/
	Place circuit breakers in ON position in LCC-SRCC and LCC-SRCC/ACP.			
	Place brine chiller lock switch to ON position and observe stopping of emergency subsystem fan and pump.		111/1	.05/LCC/
	Use stop watch to time automatic starting sequence of refrigeration compressor and supply fan of brine chiller in LCC-Sub C, or LCC-SRCC, LCC-SRCC/ACP.		221/1	.05/LCC/
	Allow system to operate for 1/2 hour.		221/1	.50/LCC/
	Observe monitor panel lights for proper indication.		221/1	.05/LCC/
	Check the following for required readings:			
	Brine temperature at chiller outlet with thermometer.		221/1	.05/LCC/
	Air compressor pressure gage.		221/1	.05/LCC/
	Airflow rate to electronic equipment with velocity meter.		221/1	.05/LCC/
/2 Brine Subsystem, Chilled	TEST: With brine chiller operating, but insufficient cooling capacity:	4001 Multimeter		
	Check pressure indicators at brine circulating pump BP-1 inlet and discharge for proper indication		221/1	.05/LCC/.46259
	Check for obvious damage and/or leakage.		211/1	.10/LCC/.46259
	Check temperature gage at chiller CH-1 outlet for specified brine temperature reading.		111/1	.05/LCC/.46259
	Check level of brine in expansion tank, ET-1.		121/1	.05/LCC/.46259
	With chiller not operating:			
	Check circuit breakers No. 3 for LCC-Sub C or LCC-SRCC in LCDS Panel for ON position.		111/1	.05/LCC/.46259

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3** **/2 Brine Subsystem, Chilled**	**TEST:** (Cont.) With chiller not operating: Check brine pump circuit breaker CB-1 in brine chiller control panel, P-1 for ON position. Check refrigerant compressor circuit breaker CB-2 in brine chiller control panel, P-1 for ON position. Use multimeter to check for 120 VAC across key switch, SW-1, in brine chiller control panel, P-1 and key switch, SW-2, in vent system control panel, P-2. Check for 120 VAC across the following switches: Oil pressure cutout, SW-3. Low temperature cutout, SW-4. High and pressure cutouts, SW-2.		111/1 111/1 221/1 221/1	.05/LCC/.46259 .05/LCC/.46259 .05/LCC/.46259 .15/LCC/.46259
	REPAIR: Place circuit breaker No. 3 for LCC-Sub C or LCC-SRCC in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Place brine chiller key switch SW-1, and vent system key SW-2 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Gate, plug and check valves. Sediment strainer. Quick-disconnect coupling. Rubber hose assembly Pipe and associated fittings. Compressor muffler Heat exchanger Wiring Flow meter. Place brine chiller key switch and vent system key switch in ON position and remove Warning Placard. Place circuit breaker No. 3 in LCC Sub C, or LCC-SRCC in LCDS Panel in ON position and remove Warning Placard. Place defective item on truck.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 111/1 111/1 111/1 111/1 111/1	.05/LCC/.01165 .05/LCC/.01165 .25/LCC/.01165 .05/LCC/.01165 .05/LCC/.01165 .10/LCC/.01165

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3**				
/2 Brine Subsystem, Chilled	**SERVICE:** Place brine pump circuit breaker CB-1 in brine chiller control panel P-1 in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning	111/1	.05/LCC/Unk
	Add brine solution to required level in expansion tank, ET-1 using pump, after checking hydrometer to determine strength of solution to be added.	Hydrometer Lantern, Electric Container, 5-Gallon Container, 1-Gallon	111/1 121/1	.05/LCC/Unk .30/LCC/Unk
	Place circuit breaker in ON position and remove Warning Placard.	Stepladder- 6 foot	111/1	.05/LCC/Unk
	CHECKOUT: Refer to steps in Environmental Control System, LCC.		221/1	.55/LCC/Unk
/3 Chiller, Brine, Refrigerating	**TEST:** With chiller operating but not sufficient cooling capacity:	Common Hand Tools		
	Check brine pump BP-1 suction and discharge pressures.	4001 Multimeter Detector, Air Leak	111/1	.05/LCC/.44977
	Check brine temperatures at inlet and outlet to chiller.	Thermometer Set,	111/1	.05/LCC/.44977
	Check refrigerant compressor CP-1 suction and discharge pressures.	Self-Indicating Liquid	111/1	.05/LCC/.44977
	Check damper opening for proper airflow.	3039 Leak Detector, Refrigerant Gas	111/1	.05/LCC/.44977
	Check flow of refrigerant through sight glass.		111/1	.05/LCC/.44977
	Check power distribution lines for proper voltage.		111/1	.05/LCC/.44977
	Check condenser coil CC-1 for clogging.		211/1	.05/LCC/.44977
	With chiller not operating:			
	Check for 120 VAC across fuse.		221/1	.05/LCC/.44977
	Check that PE-1, PE-2, and PE-3 operate.			
	Check that supply fan S-1 and exhaust fan E-1 are operating.			
	Check for 120 VAC across motor starter overload heater.		221/1	.05/LCC/.44977
	Check for power continuity across brine pump, motor starter, ST-1 in panel P-1 and compressor motor starter ST-2 in panel P-1.		221/1	.05/LCC/.44977
	Check that relays R-1 and R-3 are energized. Located in vent system control panel P-2.		221/1	.10/LCC/.44977
	Check that solenoid valve PNV-2 in panel P-1 and PNV-5 in panel P-2 operate.		221/1	.10/LCC/.44977
	Check that brine pump BR-1 and compressor CP-1 operate.		111/1	.05/LCC/.44977
	Check for evidence of air, brine and refrigerant leaks.		111/1	.05/LCC/.44977

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	REPAIR: Place circuit breaker No. 3 for LCC-Sub C or LCC-SRCC in LCDS Panel and brine chiller key switch SW-1 and vent system key switch, SW-2 in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance	111/1	.05/LCC/.00651
	Remove and replace the following defective items as required:			
	Flexible connection.		111/1	.15/LCC/.00651
	Pressure gage.		111/1	.15/LCC/.00651
	Drain valve.		111/1	.15/LCC/.00651
	Place circuit breaker, brine chiller key switch SW-1 and vent system key switch SW-2 in ON position and remove Warning Placard.		111/1	.05/LCC/.00651
	Place defective item on truck.			
	CHECKOUT: Check circuit breakers in control panel for ON position.		111/1	.05/LCC/.00651
	Place chiller key switch SW-1 and vent system key switch SW-2 to ON position and observe starting sequence of fans, brine pump and compressor.		111/1	.05/LCC/.00651
	Check brine pump suction and discharge pressure gages for proper pressure readings.		111/1	.05/LCC/.00651
	Check compressor suction and discharge pressure gages for proper pressure readings.		111/1	.05/LCC/.00651
	Check brine line valves for required open or closed position.		111/1	.05/LCC/.00651
	Check brine temperature at chiller outlet for specified reading.		111/1	.05/LCC/.00651
	REMOVE: Place circuit breaker No. 3 for LCC-Sub C or No. 3 and in LCDS Panel, in OFF position and attach Warning Placard.		111/1	.05/LCC/.17170
	Place chiller key switch SW-1 in Panel P-1 and vent system key switch SW-2 in P-2 in OFF position.		111/1	05/LCC/.17170
	Uncouple quick-disconnect fittings for brine supply and return lines.		111/1	.20/LCC/.17170
	Disconnect inlet and discharge air ducts from brine chiller.		111/1	.20/LCC/.17170
	Disconnect air lines to chiller control panel, P-1.		111/1	.10/LCC/.17170
	Disconnect electrical wiring.		111/1	.10/LCC/.17170
	Remove brine chiller mounting hardware.		111/1	10/LCC/.17170

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3				
/2 Brine Subsystem, Chilled				
/3 Chiller, Brine, Refrigerating	**INSTALL: Install brine chiller mounting hardware.**	**Common Hand Tools**	**111/1**	**.15/LCC/.17170**
	Connect inlet and discharge air ducts.		**111/1**	**.50/LCC/.17170**
	Connect electrical wiring.		**221/1**	**.20/LCC/.17170**
	Connect supply and return lines to brine chiller.		**111/1**	**.20/LCC/.17170**
	Connect air lines to chiller control panel, P-1.		**111/1**	**.20/LCC/.17170**
	ADJUST: Perform the following:	**Stop Watch**		
	Adjust PE(TD1S) until exhaust fan E-1 starts as specified.	**Common Hand Tools**	**222/1**	**.10/LCC/.17170**
	Adjust PE(TD2S) until supply fan S-1 and brine pump BP-1 starts as specified.		**222/1**	**.10/LCC/.17170**
	Adjust PE-3 until refrigerant compressor CP-1 starts as specified.			
	Adjust pressure controller PC-1 for specified refrigerant condensing pressure.		**222/1**	**.20/LCC/.17170**
	Adjust high-low pressure cutout for proper setting.		**222/1**	**.15/LCC/.17170**
	REPAIR: By means of a vacuum pump, evacuate refrigerant from receiver and the rest of system into water cooled refrigerant drum until pressure in brine chiller system is reduced to 1 psig.	**Common Hand Tools** **Receiver, Refrigerant** **4316 Truck, Refrigerating** **System Servicing**	**222/1**	**.50/LCC/.06848**
	Close nondefective valves in brine chiller.		**111/1**	**.05/LCC/.06848**
	Disconnect lines coupled to defective item. Cap disconnected lines if needed.		**111/1**	**.20/LCC/.06848**
	Remove mounting hardware and defective item.		**111/1**	**.10/LCC/.06848**
	Install replacement item and mounting hardware.		**111/1**	**.20/LCC/.06848**
	Open valves in brine chiller, using vacuum pump evacuate system of air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury.		**222/1**	**.50/LCC/.06848**
	Fill system with refrigerant through a dryer in charging line.		**222/1**	**.25/LCC/.06848**
	Start brine chiller, check for leaks at connections and purge as required.		**221/1**	**.10/LCC/.06848**
	Close receiver discharge valve.		**111/1**	**.05/LCC/.06848**
	Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.		**222/1**	**.50/LCC/.06848**
	Remove mounting hardware and defective items.		**221/1**	**.10/LCC/.06848**

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3** **/2 Brine Subsystem, Chilled** **/3 Chiller, Brine, Refrigerating**	**REPAIR:** (Cont.) Open valves in brine chiller and using a vacuum pump evacuate system from air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury.			222/1	.50/LCC/.06848
	Fill system with refrigerant through a dryer in charging line.			222/1	.25/LCC/.06848
	Start brine chiller check for leaks at connections and purge it as required.			222/1	.10/LCC/.06848
	CHECKOUT: Connect unit to test bench and outside air ducts.	4560	Test Stand, Brine Chiller	221/1	.20/LCC/.06848
	Connect electrical wiring to chiller unit for electrical power supply.			221/1	.10/LCC/.06848
	Check that circuit breakers in panel are in ON position.	4316	Truck, Refrigeration System Servicing.	111/1	.05/LCC/.06848
	Make necessary hose and piping connections to brine supply.			111/1	.10/LCC/.06848
	Place brine chiller lock switch to ON position to start brine chiller.			111/1	.05/LCC/.06848
	Observe brine pump flow rate for 26 gpm and brine temperature readings of 36°F (Maximum outlet when inlet is 40°F.			211/1	.10/LCC/.06848
	ADJUST: Regulate flow of brine as specified by adjusting plug valves on brine supply line.		Common Hand Tools	222/1	.10/LCC/.06848
/4 Damper Set, Modulating	**REPAIR:** Close off control air supply to PC-1 in Brine Chiller Control Panel.		Common Hand Tools	221/1	.10/LCC/.005
	Disconnect linkage, air line and remove mounting hardware.	4031	Truck, Mechanical Maintenance.	221/1	.10/LCC/.005
	Remove and replace defective operator.			221/1	.10/LCC/.005
	Install mounting hardware and connect linkage and air line.			221/1	.20/LCC/.005
	Open control air valve.			221/1	.05/LCC/.005
	CHECKOUT: Observe damper operation when air supply to PC-1 is closed off.			221/1	.10/LCC/.005
	ADJUST: Adjust linkage for proper positioning of damper.		Common Hand Tools	221/1	.20/LCC/.005

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** **1212. 3** **/2 Brine Subsystem, Chilled** **/3 Chiller, Brine, Refrigerating** **/4 Pump, Centrifugal, Power Driven**	**REMOVE: Place pump motor circuit breaker CB-1 in Panel P-1 in OFF position and attach Warning Placard in conspicuous position.**	**Common Hand Tools** **Placard, Warning**	**221/1**	**.05/LCC/.08566**
	Disconnect electrical wiring.		**221/1**	**.10/LCC/.08566**
	Disconnect piping from pump and remove mounting hardware.		**111/1**	**.20/LCC/.08566**
	INSTALL: Install mounting hardware.	**Common Hand Tools**	**111/1**	**.10/LCC/.08566**
	Connect piping and electrical wiring.		**221/1**	**.30/LCC/.08566**
	Place pump motor circuit breaker in ON position and remove Warning Placard.		**221/1**	**.05/LCC/.08566**

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3** **/2 Brine Subsystem, Chilled** **/3 Chiller, Brine, Refrigerating** **/4 Panel, Brine Chiller, Control**	**TEST: If refrigeration is not functioning:**		**Common Hand Tools**		
	Check circuit breaker No. 3 in LCDS Panel and key switch SW-1 in chiller control panel P-1 for ON position.	**4001**	**Multimeter**	**111/1**	**.05/LCC/.02463**
	Reset levers for ON position.			**111/1**	**.05/LCC/.02463**
	Check for 110 VAC across fuse.			**221/1**	**.10/LCC/.02463**
	Check circuit continuity through thermal overload heater fuse.			**221/1**	**.05/LCC/.02463**
	Check LPCO or HPCO and OPCO switches in Panel P-1 for closed position.			**222/1**	**.20/LCC/.02463**
	Check solenoid valve PNV-2 in Panel P-1.			**222/1**	**.05/LCC/.02463**
	Check brine pump BP-1 refrigerating compressor CP-1 for operational status.			**111/1**	**.10/LCC/.02463**
	Brine not circulating. Refer to Panel, Power Distribution			**222/1**	**.25/LCC/.02463**
	Air not flowing. Refer to Panel, Brine Chiller Control.			**222/1**	**.60/LCC/.02463**
	Temperature or pressures not indicating. Refer to Panel, Brine Chiller Control and check gages for proper reading.			**222/1**	**.60/LCC/.02463**
	REPAIR: Place circuit breaker No. 3 for LCC-Sub C, or for LCC-SRCC and LCC-SRCC/ACP in LCDS Panel of OFF position and attach Warning Placard in conspicuous position.	**4031**	**Common Hand Tools** **Truck, Mechanical Maintenance** **Placard, Warning**	**111/1**	**.05/LCC/.02332**
	Remove and replace following defective items as required:				
	Fuse.			**221/1**	**.05/LCC/.02332**
	Control relay.			**221/1**	**.10/LCC/.02332**
	Circuit breaker.			**221/1**	**.35/LCC/.02332**
	Key switch.			**221/1**	**.35/LCC/.02332**
	Solenoid valve PNV-2			**221/1**	**.40/LCC/.02332**
	Fluid flow restrictor R-1.			**111/1**	**.30/LCC/.02332**
	Pressure switch.			**221/1**	**.35/LCC/.02332**
	Thermostatic switch.			**221/1**	**.35/LCC/.02332**
	Pressure gage.			**111/1**	**.30/LCC/.02332**
	Thermometer.			**111/1**	**.30/LCC/.02332**
	Plug Valve.			**111/1**	**.30/LCC/.02332**
	Close circuit breaker and remove warning placard.			**111/1**	**.05/LCC/.02332**
	Place defective item on truck.			**111/1**	**.10/LCC/.02332**

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3** **/2 Brine Subsystem, Chilled** **/3 Chiller, Brine Refrigerating** **/4 Panel, Brine Chiller, Control**	**CHECKOUT:** Refer to environmental Control System, LCC for steps. Observe replacement thermometer and/or pressure gages for indications.	Stop Watch	221/1 221/1	.60/LCC/.02332 .10/LCC/.02332
/5 Starter, Motor	**REPAIR:** Place circuit breaker No. 3 for LCC-Sub C, or LCC SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace the thermal overload element as required. Restore power and remove warning placard. Place defective item on truck. **CHECKOUT:** Place motor starter in ON position. Check that refrigerant compressor, or brine pump motor start **REMOVE:** Place circuit breaker No. 3 for LCC-Sub C, or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring and remove mounting hardware. Remove defective starter. Place defective item on truck. INSTALL: Connect wiring and install mounting hardware. Place circuit breakers in ON position and remove Warning Placard.	Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Common Hand Tools	211/1 221/1 111/1 111/1 111/1 111/1 211/1 221/1 221/1 111/1 221/1 211/1	.05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .10/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .12/LCC/.00001 .05/LCC/.00001
/5 Switch, Pressure, PE-3	ADJUST: Manually adjust pressure switches to activate within **REMOVE:** Place circuit breaker No. 3 for LCC-Sub C, or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Shut off air at line valve closest to pressure switch. Disconnect pressure switch wiring, tubing and pressure switch. Place defective item on truck.	Common Hand Tools Placard Warning Common Hand Tools 4031 Truck, Mechanical Maintenance.	212/1 111/1 111/1 111/1	.20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212,3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Panel, Brine Chiller, Control					
/5 Starter, Motor	INSTALL: Install replacement switch.		Common Hand Tools	221/1	.05/LCC/.00001
	Connect electrical wiring and tubing.			221/1	.30/LCC/.00001
	Reactivate circuit by opening air line shutoff valves.			221/1	.10/LCC/.00001
	Place circuit breakers in ON position and remove Warning Placard.			211/1	.05/LCC/.00001
	CHECKOUT: Check that air valves are OPEN.			211/1	.05/LCC/.00001
	Check that switches operate.			211/1	.05/LCC/.00001
	ADJUST: Manually adjust pressure switches to activate within the respective pressure/time delay ranges.		Common Hand Tools Stop Watch	212/1	.20/LCC/.00001
/5 Regulator, Pressure, PC-1	ADJUST: Note condensing pressure and change pressure regulator setting to this pressure.		Common Hand Tools	221/1	.05/LCC/00128
	Check branch air pressure for approximately 7-1/2 psig.			221/1	.05/LCC/.00128
	Reset to 157 psig.			221/1	.05/LCC/.00128
	REMOVE: Close instrument air supply valve.		Common Hand Tools	111/1	.01/LCC/.00128
	Disconnect control air lines.	4031	Truck, Mechanical Maintenance	221/1	.05/LCC/.00128
	Remove pressure regulator.			111/1	.05/LCC/.00128
	Place defective item on truck.			111/1	.05/LCC/.00128
	INSTALL: Install new pressure regulator.		Common Hand Tools	111/1	.10/LCC/.00128
	Connect control air lines.			221/1	.25/LCC/.00128
	CHECKOUT: Check for air leaks at pressure regulator connections.			111/1	.05/LCC/.00128
	Check that pressure regulator operates dampers by varying controls.			111/1	.05/LCC/.00128
	ADJUST: Adjust pressure regulator to specified setting.		Common Hand Tools	221/1	.05/LCC/.00128

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Brine Subsystem, Chilled				
/3 Tank, Expansion	REPAIR: Place brine pump circuit breaker CB-1 in P-1 in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard Warning.	111/1	.05/LCC/.00112
	Remove and replace following items as required:			
	(1) Safety relief valve.		111/1	.20/LCC/.00112
	(2) Gate valve.		111/1	.20/LCC/.00112
/2 Distribution Subsystem, Cooling Air	TEST: High temperature alarm:	Common Hand Tools		
	If fan S-4 is not operating, check the following:	4001 Multimeter		
	Check circuit breakers for LCC-Sub C and LCC-SRCC and LCC-SRCC/ACP in LCDA Panel fan for ON position.	Stepladder, 6-foot Meter, Air Velocity Placard, Warning	111/1	.05/LCC/
	Check for continuity across fuse.	Thermometer Set,	221/1	.05/LCC/
	Test for 208 VAC across fan motor starter.	Self-Indicating	221/1	.05/LCC/
	If fan S-4 is operating perform the following:	Liquid in Glass		
	Using air velocity meter check air flow downstream from the following points:	4557 Gage Set, Pressure Dial Indicating		
	Past damper HC-1D		222/1	.05/LCC/
	Past damper HC-4D		222/1	.05/LCC/
	Past filter F-2		222/1	.05/LCC/
	Past damper HC-2D		222/1	.05/LCC/
	Past damper		222/1	.05/LCC/
	Past damper		222/1	.05/LCC/
	Past damper HC-3D		222/1	.05/LCC/
	Using thermometer set, check air temperature leaving cooling coil.		221/1	.10/LCC/
	Visually check temperature and pressure indicators on duct.		211/1	.05/LCC/
	Check pressure electric switches PE-10 thru PE-12 by varying settings on thermostats TA-1 and TA-2 then return settings to normal position.		221/1	.20/LCC/
	Check switch PE-9 by varying settings on flow controller FA-1 then replace setting to normal operating position.		221/1	.10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Distribution Subsystem, Cooling Air	TEST: Check mixed air discharge thermostat TC-1 by varying settings, then replace setting to normal operating position.		221/1	.10/LCC/
	Check that PNV-1 solenoid activates TC-1 controller upon startup of S-4 fan.		221/1	.10/LCC/
	Check D-5 damper operator by activating TC-1 controller.		221/1	.10/LCC/
	With multimeter, check for short across terminals to PE-10 at alarm panel terminal board.		221/1	.10/LCC/
	Check wiring, ducting and flexible connections for deteriorations		221/1	.10/LCC/
	Low temperature alarm: With multimeter, check for short across the terminals to PE-11 at alarm panel terminal board.		221/1	.10/LCC/
	Low flow alarm: With multimeter, check for short across terminals at PE-9 at alarm panel terminal board.		221/1	.10/LCC/
	Check wiring, ducting and flexible connections for deteriorations.		221/1	.10/LCC/
	REPAIR: Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach warning placard in conspicuous position.	Placard, Warning Stepladder, 6-foot Common Hand Tools	211/1	.05/LCC/
	Remove and replace the following defective items as required:	4031 Truck, Mechanical Maintenance		
	Thermometer		211/1	.15/LCC/
	Pressure gage.		211/1	.15/LCC/
	Flexible connection		211/1	.40/LCC/
	Sound trap		111/1	.30/LCC/
	Air duct hose		211/1	.40/LCC/
	Wiring		221/1	.80/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in ON position and remove warning placard.		211/1	.05/LCC/
	CHECKOUT: Check brine chiller lock switch for ON position and observe start of fan S-4		221/1	.05/LCC/
	Check thermometer and pressure gage for indication.		221/1	.10/LCC/
/3 Air Conditioner, AC-1	TEST: Check fan S-4 discharge using air velocity meter.	Meter, Air Velocity	221/1	.15/LCC/
	Check toggle switch for ON position if plenum light not on.	Common Hand Tools	111/1	.05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Distribution Subsystem, Cooling Air				
/3 Air Conditioner, AC-1	**REPAIR:** Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning Stepladder, 6-foot	211/1	05/LCC/
	Remove and replace the following defective items as required:	4031 Truck, Mechanical Maintenance		
	Flexible connection.		211/1	30/LCC/
	Incandescent lamp.		211/1	10/LCC/
	Tobble switch.		211/1	20/LCC/
	Place circuit breakers for LCC-Sub C, and/or LCC-SRCC LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard.		211/1	05/LCC/
	Place defective item on truck.		111/1	05/LCC/
	CHECKOUT: Check flexible connection for air tightness.		211/1	10/LCC/
	Check that plenum light activates when toggle switch is placed in ON position.		211/1	05/LCC/
/4 Fan, Centrifugal, Power Driven	**REMOVE:** Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in the OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning Lanter, Electric	111/1	05/LCC/
	Tag and disconnect wiring of motor.		221/1	10/LCC/
	Disconnect ducts and flexible connections.		111/1	20/LCC/
	Remove mounting hardware.		111/1	20/LCC/
	INSTALL: Replace fan mounting hardware.	Common Hand Tools	211/1	20/LCC/
	Connect duct work and flexible connections.		211/1	20/LCC/
	Connect wiring to motor.		211/1	10/LCC/
	Place circuit breaker in ON position and remove Warning Placard.		211/1	05/LCC/
	CHECKOUT: Check air flow to electronic equipment for specified airflow, using air velocity meter.	Meter, Air Velocity	221/1	10/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** 1212.3 /2 Distribution Subsystem, Cooling Air /3 Air Conditioner, AC-1 /4 Damper Set, Modulating	**REPAIR:** Remove and replace the defective piston damper operator by:		Common Hand Tools Placard, Warning		
	Place circuit breakers LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in the OFF position and attach Warning Placard.	4031	Truck, Mechanical Maintenance	111/1	05/LCC/
	Disconnect air piping and linkage.			221/1	30/LCC/
	Remove and replace defective item.			221/1	25/LCC/
	Place circuit breaker to ON position and remove Warning Placard.			111/1	05/LCC/
	Place defective item on truck.			111/1	10/LCC/
	CHECKOUT: Check damper activation when solenoid air valve is actuated through fan S-4 motor starter.			211/1	10/LCC/
	ADJUST: With test thermometer and air velocity meter in supply duct, adjust damper linkage to modulate in the required range.		Common Hand Tools Thermometer Set, Self-Indicating, Liquid in Glass Stepladder, 6-foot	222/1	30/LCC/
/3 Fan, Centrifugal, Power Driven	**REMOVE:** Place circuit breaker in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Truck, Mechanical Maintenance	111/1	05/LCC/
	Disconnect electrical wiring.			111/1	25/LCC/
	Loosen clamps and remove flexible ducts.		Placard, Warning	111/1	15/LCC/
	Remove mounting hardware and defective exhaust fan.		Stepladder, 6-foot	111/1	15/LCC/
	Place defective item on truck and secure.			111/1	05/LCC/
	INSTALL: Install replacement fan and mounting hardware.		Common Hand Tools	111/1	15/LCC/
	Connect flexible ducts.		Stepladder, 6-foot	111/1	15/LCC/
	Connect electrical wiring.			111/1	25/LCC/
	Place circuit breaker in LCDA Panel in ON position and remove Warning Placard.			111/1	05/LCC/
	CHECKOUT: Check for specified airflow.		Meter, Air Velocity	111/1	10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP					
1212.3					
/2 Distribution Subsystem, Cooling Air					
/3 Starter, Motor .	REPAIR: Place circuit breaker in LCDA Panel in OFF position and attach Warning Placard in conspicuous position		Common Hand Tools Placard, Warning	111/1	05/LCC/
	Remove and replace defective overload heater.	4031	Truck, Mechanical Maintenance	221/1	25/LCC/
	Place circuit breaker in LCDA Panel in ON position and remove Warning Placard			111/1	05/LCC/
	Place defective item on truck.			111/1	10/LCC/
	CHECKOUT: Check that fan operates.			111/1	05/LCC/
	REMOVE: Place circuit breaker in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	05/LCC/
	Remove mounting hardware and disconnect electrical wiring.	4031	Truck, Mechanical Maintenance	221/1	20/LCC/
	Remove defective motor starter.			111/1	05/LCC/
	Place defective item on truck.			111/1	05/LCC/
	INSTALL: Install replacement starter, connect electrical wiring and install mounting hardware.		Common Hand Tools	211/1	20/LCC/
	Place circuit breaker in ON position and remove Warning Placard.			111/1	05/LCC/
	Place motor starter in ON position.			111/1	05/LCC/
/3 Panel, Control, Air Conditioner	TEST: If fan S-4 is not operating:		Common Hand Tools		
	Test for 120 VAC across pressure switch PE-4 with multimeter.	4001	Multimeter	221/1	05/LCC/
	Test for 208 VAC across fan circuit breaker.			221/1	05/LCC/
	REPAIR: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	4031	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance	211/1	05/LCC/
	Remove and replace the following defective items as required:				
	Fuse.			221/1	05/LCC/
	Circuit breaker			221/1	30/LCC/
	Solenoid valve, PNV-1.			221/1	30/LCC/
	Plug valve.			111/1	30/LCC/
	Airflow control, FA-1			111/1	30/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air				
/3 Panel, Control, Air Conditioner	REPAIR: (Cont.) Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard		211/1	05/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	CHECKOUT: Check fuse and circuit breaker by observing that fan starts.		221/1	.05/LCC/
	Check solenoid valve PNV-1 by observing indication of control air to thermostat TC-1 after fan starts.		221/1	.05/LCC/
	Check airflow controller, FA-1 by varying controller setting to actuate pressure switch PE-4.		221/1	.05/LCC/
	Adjust airflow controller FA-1 to specified setting.		222/1	.05/LCC/
/4 Starter, Motor	REPAIR: Place circuit breakers for LCC-Sub C, LCC-SRCC, and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance	111/1	.05/LCC/
	Remove and replace defective heater.		221/1	.05/LCC/
	Restore power and remove Warning Placard.		111/1	.05/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	CHECKOUT: Check that air conditioner operates with switches in ON position.		211/1	.05/LCC/
	REMOVE: Place circuit breakers for LCC-Sub C, LCC-SRCC, and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance.	211/1	.05/LCC/
	Disconnect wiring.		221/1	.05/LCC/
	Remove mounting hardware.		111/1	.05/LCC/
	Remove defective starter.		111/1	.05/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	INSTALL: Replace defective starter.	Common Hand Tools	111/1	.05/LCC/
	Replace mounting hardware.		111/1	.05/LCC/
	Connect wiring.		221/1	.10/LCC/
	Restore power and remove Warning Placard.		211/1	.05/LCC/
	CHECKOUT: Check that air conditioner operates when switches are placed in ON position.		221/1	.10/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3					
/2 Distribution Subsystem, Cooling Air					
/3 Panel, Control, Air Conditioner					
/4 Switch, Pressure, PE-4	ADJUST: Manually adjust pressure switch to actuate within specified pressure/time delay range, using stop watch. Perform this adjustment by restarting brine chiller.		Stop Watch	221/1	.20/LCC/36M
	REMOVE: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Disconnect wiring.	4031	Truck, Mechanical Maintenance	221/1	.10/LCC/
	Disconnect control air line and remove defective switch.			221/1	.15/LCC/
	INSTALL: Secure replacement switch in place.		Common Hand Tools	111/1	.10/LCC/
	Connect wiring.			221/1	.05/LCC/
	Connect control air lines.			221/1	.05/LCC/
	Restore power and remove Warning Placard.			221/1	.05/LCC/
	CHECKOUT: Observe that fan starts.			221/1	.05/LCC/
/4 Thermostat, Remote Bulb,	CALIBRATE: Install adapters and master thermometer set in system.		Common Hand Tools	222/1	.25/LCC/36M
	Perform comparison check of master thermometer with system thermostats.		Thermometer Set, Self-indicating,	222/1	.30/LCC/36M
	Remove adapters and master thermometer set.		Liquid in Glass. Tool kit, Thermostat Adjustment and Repair	221/1	.20/LCC/36M
	REPAIR: Remove and replace the defective pressure gage.		Common Hand Tools	111/1	.15/LCC/
	Place defective item on truck.		Truck, Mechanical Maintenance.	111/1	.05/LCC/
	CHECKOUT: Observe pressure indication.			211/1	.05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC. LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Control, Air Conditioner /4 Switch, Pressure, PE-4 /4 Thermostat, Remote Bulb	REMOVE: Disconnect control air piping and cap.	Common Hand Tools	221/1	.20/LCC/
	Remove mounting hardware and defective item.	4031 Truck, Mechanical Maintenance	211/1	.10/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	INSTALL: Install replacement item and mounting hardware.	Common Hand Tools	222/1	.15/LCC/
	Connect control air piping.		222/1	.20/LCC/
	CHECKOUT: TA-1 or TA-2: Vary thermostat setting and observe that temperature alarm actuates.	Common Hand Tools	222/1	.05/LCC/
	TC-1: Vary thermostat TC-1 and observe modulating damper actuates.		222/1	.05/LCC/
	ADJUST: Adjust thermostat setting to specified values.	Tool Kit, Thermostat Adjustment and repai	111/1	.05/LCC/
/4 Switch, Pressure	REMOVE: Place circuit breaker in LCB Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Warning: Circuit breaker in LCB Panel, is power source for: generator alarm condition; main gate operator and limit switch; flood lighting contactor, room 103; 4-gang J-box in access shaft; door operator of door in room 105.	4031 Truck, Mechanical Maintenance. Placard, Warning		
	Disconnect electrical wiring.		211/1	.05/LCC/
	Disconnect control air lines and cap.		211/1	.05/LCC/
	Remove defective pressure switch.		211/1	.05/LCC/
	Place defective item on truck.		111/1	.05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP				
1212.3				
/2 Distribution Subsystem, Cooling Air				
/3 Panel, Control, Air Conditioner				
/4 Switch, Pressure, PE-4				
/4 Switch, Pressure	INSTALL: Install replacement pressure switch.	Common Hand Tools	211/1	.10/LCC/
	Connect control air lines.		211/1	.05/LCC/
	Connect electrical wiring.		221/1	.10/LCC/
	Place circuit breaker in LCB Panel in ON position and remove Warning Placard.		111/1	.05/LCC/
	CHECKOUT: For PE-10, PE-11, and PE-12 refer to Thermostat, Remote Bulb, TA-1 Line 6, Checkout, step a.		222/1	.05/LCC/
	Check that FA-1 flow controller discharges control air to PE-9 pressure switch, activating alarm when it is moved beyond set point, thus producing an increased demand.		222/1	.05/LCC/
	Return thermostats to normal operating setting.		222/1	.05/LCC/
	Return flow controller to normal operating setting.		222/1	.05/LCC/
/2 Emergency Subsystem	SERVICE: Lubricate pump and fan bearings as required. Clean strainer in brine line.	Lantern, Electric Stepladder, 6-foot Kit, Lubrication Common Hand Tools	111/1	.20/LCC/3M
	CHECKOUT: Shut down normal system and attach Warning Placard in conspicuous position.	Meter, Air Velocity Placard, Warning	221/1	.05/LCC/3M
	Check that emergency fan starts.	Stepladder, 6-foot	221/1	.05/LCC/3M
	Check that emergency pump starts.	Lantern, Electric	221/1	.05/LCC/3M
	Check damper for closed position and damper for open position.		111/1	.05/LCC/3M
	Check airflow (3500 cfm) to electronic equipment through damper.		211/1	.10/LCC/3M
	Checkout emergency cooling water for 40°F. Temperature at start of emergency cycle.		111/1	.05/LCC/3M
	Start normal system.		221/1	.10/LCC/3M
	Check damper for open position and damper for closed position when normal system is in operation.		211/1	.05/LCC/3M
	Check that emergency pump stops when normal system is in operation.		211/1	.05/LCC/3M

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS		SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME-PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem	CHECKOUT: (Cont.) Check that odor absorbing unit starts when manual switch is placed in ON position.			211/1	.05/LCC/3M
	TEST: No airflow:		Common Hand Tools		
	Check emergency fan manual switch for ON position.	4001	Multimeter	111/1	.05/LCC/
	Test continuity across pressure switch.		Meter, Air Velocity	221/1	.05/LCC/
	Test for 28 VDC across emergency fan.		Stepladder, 8-foot	221/1	.05/LCC/
	Check wiring.		Lantern, Electric	221/1	.10/LCC/
	High air temperature:		Thermometer Set,		
	Check damper for open position.		Self Indicating,	111/1	.10/LCC/
	Check damper for closed position.		Liquid in Glass	111/1	.10/LCC/
	Check airflow to electronic equipment for specific rate using air velocity meter.			221/1	.10/LCC/
	Check emergency pump manual switch for ON position.			111/1	.05/LCC/
	Test continuity across pressure switch.			221/1	.05/LCC/
	Test for 28 VDC across emergency pump.			221/1	.05/LCC/
	Check emergency cooling water temperatures for specified indications.			111/1	.05/LCC/
	Check for leaks in emergency cooling water lines.			111/1	.20/LCC/
	Odor control not operating.				
	Check odor control unit manual switch for ON position and test for continuity across manual switch.			221/1	.05/LCC/
	REPAIR: Drain cooling water as required for dry access by opening pump drain valve.		Common Hand Tools	111/1	.20/LCC/
	Close drain valve when sufficient quantity of water is drained.	4031	Truck, Mechanical Maintenance	111/1	.05/LCC,
	Remove and replace the following defective items as required:				
	Shock attenuator.			111/1	.20/LCC/
	Gate valve.			111/1	.20/LCC/
	Sediment strainer.			111/1	.20/LCC/
	Rubber hose assembly.			111/1	.20/LCC/
	Place defective item on truck.			111/1	.05/LCC,
	SERVICE: Use hand pump to add coolant solution to required level in emergency cooling water tank.		Common Hand Tools Lantern, Electric Container, 5-Gallon Pump, Rotary, Hand Driven Stepladder, 6-foot	111/1	.05/LCC,

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** **1212.3** **/2 Emergency Subsystem** **/3 Cooling Unit, Emergency**				
	TEST: High air temperature:	**Common Hand Tools**		
	Check chilled water pump for ON position.	**4001 Multimeter**	**111/1**	**.05/LCC/**
	Test for 28 VAC across chilled water pump.		**221/1**	**.05/LCC/**
	Check water temperature to coil.		**111/1**	**.05/LCC/**
	REPAIR: Close suction line gate valve and drain cooling water	**Common Hand Tools**	**111/1**	**.25/LCC/**
	from piping for removal of defective items.	**4031 Truck, Mechanical Maintenance**		
	Remove and replace the following defective items as required:			
	Check valve.		**111/1**	**1.0/LCC/**
	Plug valve.		**111/1**	**1.0/LCC/**
	Gate valve.		**111/1**	**1.0/LCC/**
	Quick-disconnect coupling.		**111/1**	**.50/LCC/**
	Open gate valve and close drain valve.		**111/1**	**.05/LCC/**
	Place defective item on truck.		**111/1**	**.10/LCC/**
	REMOVE: Place circuit breaker in LCDB Panel in OFF position and attach Warning Placard in conspicuous position.	**Common Hand Tools Placard, Warning**	**111/1**	**.05/LCC/**
	Disconnect electrical power to unit.		**221/1**	**.10/LCC/**
	Close all valves to package unit.		**111/1**	**.15/LCC/**
	Disconnect all piping to unit and cap.		**121/1**	**.50/LCC/**
	Disconnect all flexible hoses to unit and cap.		**121/1**	**.20/LCC/**
	Remove mounting hardware holding package unit in place.		**121/1**	**.50/LCC/**
	INSTALL: Attach mounting hardware.	**Common Hand Tools**	**121/1**	**.50/LCC/**
	Connect all flexible hoses to unit.		**121/1**	**.20/LCC/**
	Connect all piping to unit.		**121/1**	**.50/LCC/**
	Open all valves to package unit.		**111/1**	**.15/LCC/**
	Connect wiring, restore electrical power to unit and remove Warning Placard.		**221/1**	**.10/LCC/**
	ADJUST: Adjust cooling water flow by line valve for specified temperature difference.	**Thermometer Set, Self Indicating, Liquid in Glass**	**221/1**	**.10/LCC/**

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Cooling Coil, Air	**REMOVE:** Place circuit breaker in LCDB Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning	111/1	.03/LCC/
	Remove power to pump.		111/1	.03/LCC/
	Close cooling water line valves.		111/1	.03/LCC/
	Open piping quick disconnects.		111/1	.05/LCC/
	Remove coil mounting hardware.		111/1	.10/LCC/
	INSTALL: Replace mounting hardware.	Common Hand Tools	111/1	.15/LCC/
	Couple disconnects.		111/1	.10/LCC/
	Open cooling water valves.		111/1	.03/LCC/
	Restore power to pump.		111/1	.03/LCC/
	Place circuit breaker in ON position and remove Warning Placard.		111/1	.03/LCC/
	SERVICE: Add coolant solution, as required, with portable pump.	Common Hand Tools Container, 5-Gallon Pump, Rotary, Hand Driven Lantern, Electric	122/1	.10/LCC/
	CHECKOUT: Check that emergency cooling system is operating and that the pump is operational.		221/1	.15/LCC/
/4 Fan, Axial, Power Driven	**REMOVE:** Remove power to fan and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Remove ring clamp and flexible ducting.	4031 Truck, Mechanical Maintenance.	112/1	.15/LCC/
	Disconnect electrical wiring		122/1	.15/LCC/
	Remove mounting hardware.	3022 Truck, Dolly	111/1	.15/LCC/
	Remove defective fan assembly and place on dolly truck.	Placard, Warning	122/1	.10/LCC/
	Roll truck to elevator and place on elevator.	Ramp Set, Loading	111/1	.15/LCC/
	INSTALL: Place fan assembly in cabinet and attach mounting hardware.	Common Hand Tools	221/1	.15/LCC/
	Connect electrical wiring.	3022 Truck, Dolly	122/1	.15/LCC/
	Replace flexible ducting and ring clamp.		112/1	.15/LCC/
	Restore power and remove Warning Placard.		111/1	.05/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC; LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3					
/2 Emergency Subsystem					
/3 Cooling Unit, Emergency					
/4 Fan, Axial, Power Driven	CHECKOUT: Simulate an emergency condition to activate fan by closing off control air supply to pneumatic-electric valve			111/1	.05/LCC/
	Check that fan activates.			111/1	.03/LCC/
	Check for open control air supply to.			111/1	.03/LCC/
/4 Pump, Centrifugal, Power	REMOVE: Removed d-c power to pump and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.03/LCC/
		4031	Truck, Mechanical Maintenance.		
	Close cooling water shut off valves.			111/1	.05/LCC/
	Disconnect piping at unions.		Placard, Warning	111/1	.10/LCC/
	Remove mounting hardware.			111/1	.10/LCC/
	Disconnect wiring.			221/1	.05/LCC/
	Remove defective pump and place on truck.			122/1	.10/LCC/
	Roll truck to elevator and place on elevator.			111/1	.15/LCC/
	INSTALL: Place pump in cabinet and connect wiring in junction box.		Common Hand Tools	221/1	.10/LCC/
	Replace mounting hardware.			111/1	.10/LCC/
/4 Panel, Power Distribution	TEST: Excessive heat:		Common Hand Tools		
	Check thermostat for a setting of 187°F.	4001	Multimeter	221/1	.05/LCC/
	Check that the pneumatic piston operator linkage to variac transformer is free and not jammed.		Thermometer Set, Self, Indicating Liquid in Glass	221/1	.10/LCC/
	Check thermostat for a setting of 75°F.			221/1	.05/LCC/
	Check target gage for an alarm condition.		Lantern, Electric	221/1	
	Insufficient or no heat:				
	Check thermostat for a setting of 75°F.			221/1	.05/LCC/
	Vary setting of thermostat until it actuates and check pressure gage for output air to pneumatic piston operator.			221/1	.10/LCC/
	Tests for 120 VAC across input terminals.			221/1	.10/LCC/
	Test for 208 VAC to heating coil.			221/1	.05/LCC/
	Test for 120 VAC to			221/1	.05/LCC/
	Check pressure gage for 15 psig supply air.			221/1	.05/LCC/
	Check pressure gages at emergency pump inlet and outlet.			221/1	.05/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC/LCC-SRCC/ACP					
1212.3					
/2 Emergency Subsystem					
/3 Cooling Unit, Emergency					
/4 Panel, Power Distribution	REPAIR: Place circuit breaker in LCDB Panel, in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LCC/
	Remove and replace the following defective items as required:	4031	Truck, Mechanical Maintenance		
	Fuse.		Placard, Warning	221/1	.10/LCC/
	Circuit breaker.		Lantern, Electric	221/1	.20/LCC/
	Contactor.			221/1	.20/LCC/
	Solenoid valve.			221/1	.20/LCC/
	Fluid flow restrictor.			221/1	.20/LCC/
	Pressure gage.			221/1	.10/LCC/
	Plug valve.			111/1	.10/LCC/
	Target gage.			221/1	.20/LCC/
	Place defective item on truck.			111/1	.10/LCC/
	CHECKOUT: Place circuit breaker in LCDB Panel in ON position and remove Warning Placard.		Common Hand Tools Lantern, Electric	111/1	.05/LCC/
	For checkout of fuse, circuit breaker, contactor, solenoid valve, fluid flow restrictor and plug valve:				
	Vary room thermostat setting and observe that heater starts			221/1	.05/LCC/
	Return to original setting.			221/1	.05/LCC/
	Check pressure gage for pressure indication.			111/1	.05/LCC/
	Check target gage by varying emergency water high temperature alarm thermostat and observing for indication at target gage.			221/1	.05/LCC/
/5 Starter, Motor	REPAIR: Place circuit breaker in LCDB Panel to OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Remove and replace the overload heater when defective.	4031	Truck, Mechanical Maintenance	221/1	.25/LCC/
	Place circuit breaker in ON position and remove Warning Placard.			111/1	.05/LCC/
	Place defective item on truck.			111/1	.05/LCC/
	CHECKOUT: Check the following: Pump is operating. Fan is operating. Fan in KO_2 unit is operating.			111/1	.15/LCC/
	REMOVE: Place circuit breaker in LCDB Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Remove mounting hardware and disconnect electrical wiring.	4031	Truck, Mechanical Maintenance	221/1	.20/LCC/
	Remove defective motor starter.			111/1	.05/LCC/
	Place defective item in truck.			111/1	.05/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP				
Enviroamental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP				
1212.3				
/2 Emergency Subsystem				
/3 Cooling Unit, Emergency				
/4 Panel, Power Distribution				
/5 Starter, Motor	INSTALL: Connect electrical wiring and install mounting hardware.	Common Hand Tools	211/1	.20/LCC/
	Place circuit breaker in ON position and remove Warning Placard.		111/1	.05/LCC/
	Place motor starter in ON position.		111/1	.05/LCC/
/5 Switch, Pressure	ADJUST: Manually adjust pressure switches to activate within the respective pressure-time delay ranges.	Common Hand Tools Stop Watch	121/1	.15/LCC/ 36M
	REMOVE: Open circuit breakers for Sub C and SRCC in the SCDA Panel and attach Warning Placard in conspicuous position	Placard, Warning Common HandTools	111/1	.10/LCC/
	Close air supply valve.	4031 Truck, Mechanical Maintenance	111/1	.05/LCC/
	Disconnect electrical wiring.		111/1	.05/LCC/
	Disconnect pneumatic tub ing.		111/1	.05/LCC/
	Remove mounting hardware and defective pressure switch.		111/1	.10/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	INSTALL: Install pressure switch and mounting hardware.	Common Hand Tools	111/1	.10/LCC/
	Connect pneumatic tubing.		111/1	.05/LCC/
	Connect electrical wiring.		111/1	.05/LCC/
	Open air supply valve.		111/1	.05/LCC/
	Close circuit breakers for Sub C and SRCC in the SCDA Panel and remove Warning Placard.		111/1	.10/LCC/
	CHECKOUT: Close supply air valve and observe that pressure switches position and activate associated equipment.	Stop Watch	111/1	.05/LCC
	Observe that delays 25 seconds (40 sec in SRCC) before heating coil is energized.		111/1	.05/LCC
	Open supply air valve and observe that pressure switches re-position.		111/1	.05/LCC/
	ADJUST: Adjust to activate within the specified pressure/ time delay range.	Common Hand Tools Stop Watch	112/1	.15/LCC/

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Panel, Power Distribution				
/5 Thermostat, Remote Bulb	**CALIBRATE:** Install adapters and master thermometer set to system.	Common Hand Tools Tool Kit, Thermostat Adjustment & Repair	222/1 122/1	.20/LCC/3600 .20/LCC/3600
	Perform comparison check of master thermostat with system thermostat	Thermometer Set, Self-Indicating, Liquid in Glass	222/1	.20/LCC/3600
	Disconnect kit.	Lantern, Electric		
	REMOVE: Close air shutoff valve on branch line supplying air	Common Hand Tools	111/1	.05/LCC/
	Disconnect penumatic lines to thermostat.	4031 Truck, Mechanical Maintenance	221/1	.10/LCC/
	Remove mounting hardware and defective thermostat.		221/1	.20/LCC/
	Place defective item on truck.	Lantern, Electric	111/1	.05/LCC/
	INSTALL: Install mounting hardware and replacement thermostat.	Common Hand Tools Lantern, Electric	221/1	.15/LCC/
	Connect pneumatic lines.		111/1	.10/LCC/
	Open air shutoff valve supplying air.		111/1	.05/LCC/
	CHECKOUT: Move thermostat setting below set point and observe the following: stops control airflow to solenoid valve and actuates target gage (shows RED).	Lantern, Electric	211/1	.10/LCC/
	ADJUST: Adjust thermostat to 187°F.	Tool Kit, Thermostat Adjustment & Repair Lantern, Electric	211/1	.05/LCC/
/5 Filter, Radio Interference	**REMOVE:** Disconnect electrical wiring.	Common Hand Tools	221/1	.05/LCC/
	Remove mounting hardware and defective filter.		221/1	.10/LCC/
	INSTALL: Install replacement filter and mounting hardware.	Common Hand Tools	221/1	.10/LCC/
	Connect electrical wiring.		111/1	.05/LCC/
	CHECKOUT: Check for continuity across filter.	4001 Multimeter	221/1	.20/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Emergency Subsystem				
/3 Odor Absorbing Unit	**SERVICE:** Replace chemical cartridge.		111/1	.10/LCC/
	REPAIR: Place odor absorbing unit manual switch to OFF and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Remove and replace defective fan assembly and radio interference filter as required.	4031 Truck, Mechanical Maintenance	221/1	.20/LCC/
	Place defective item on truck.	Placard, Warning	111/1	.10/LCC/
	Restore power and remove Warning Placard.		111/1	.05/LCC/
	CHECKOUT: Observe odor absorbing unit operate.		111/1	.05/LCC/
/3 Damper Set, Modulating	**REPAIR:** Remove and replace following defective items as required: Piston operator	Common Hand Tools Stepladder, 6-Foot 4031 Truck, Mechanical Maintenance	111/1	.20/LCC/
	Place defective item on truck. Use stepladder to facilitate repair.			
	CHECKOUT: Shut down fan in air conditioner unit and observe: Damper set open and close.		111/1	.20/LCC/
	ADJUST: Adjust operator linkage for specified airflow using air velocity meter.	Common Hand Tools Meter, Air Velocity Stepladder, 6-Foot Lantern, Electric	221/1	.20/LCC/
/4 Starter, Motor	**REPAIR:** Open circuit breaker in LCDB Panel and attach Warning Placard in conspicuous position.	Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Remove and replace the defective overload heater as required.		221/1	.20/LCC/
	Restore power and remove Warning Placard.		111/1	.05/LCC/
	Place defective item on truck.		111/1	.10/LCC/
	CHECKOUT: Observe odor absorbing unit operate.		111/1	.05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3					
/2 Emergency Subsystem					
/3 Odor Absorbing Unit					
/4 Starter, Motor	REMOVE: Place circuit breaker in LCDB Panel and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Remove wiring and defective starter.	4031	Truck, Mechanical Maintenance	221/1 111/1	.10/LCC/ .10/LCC/
	INSTALL: Install replacement motor starter.		Common Hand Tools	221/1	.10/LCC/
	Attach wiring.			221/1	.05/LCC/
	Restore power and remove Warning Placard.			221/1	.05/LCC/
	CHECKOUT: Place manual motor starter to ON position and observe that odor absorbing unit starts.			111/1	.05/LCC/
/2 Control Air Subsystem	SERVICE: Lubricate the compressor and motor as required.		Common Hand Tools	111/1	.10/LCC/6M
	Clean air intake filter as required.		Kit, Lubrication	111/1	.10/LCC/6M
	Drain water from air receiver.			111/1	.10/LCC/6M
	TEST: Insufficient air pressure: Test for the following:		Common Hand Tools		
	Compressor manual starter switch for ON position.	4001	Multimeter	111/1	.05/LCC/
	Relief valve for closed position.			121/1	.05/LCC/
	For 120/208 VAC across starter switch overload relay with multimeter.			221/1	.05/LCC/
	For 120/208 VAC across starter switch.			221/1	.05/LCC/
	For 120/208 VAC across motor terminals.			221/1	.05/LCC/
	Air intake filter and check valve for being clear of obstructions.			121/1	.05/LCC/
	Pressure reducing valve integrity by observing:				
	Inlet pressure gage reading for approximately 50 psig.			121/1	.05/LCC/
	Outlet pressure gage reading for approximately 15 psig.			121/1	.05/LCC/
	Check separator air filter for functional integrity.			121/1	.05/LCC/
	Excessive air pressure:				
	Check pressure reducing valve for operation.			121/1	.05/LCC/
	Check relief valve for operation.			121/1	.05/LCC/
	Check unloader for operation.			121/1	.05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3				
/2 Control Air Subsystem	REPAIR: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Remove and replace the following defective items as required:	4031 Truck, Mechanical Maintenance		
	Pressure relief valve.	Placard, Warning	221/1	.10/LCC/
	Pressure reducing valve.		221/1	.10/LCC/
	Pressure gage.		221/1	.10/LCC/
	Motor starter overload relay.		221/1	.10/LCC/
	Pipe and associated fittings.		221/1	1.0/LCC/
	Electrical wiring.		221/1	1.0/LCC/
	CHECKOUT: Place circuit breaker in LCDA Panel to ON position and remove Warning Placard.		111/1	.05/LCC/
	Start - compressor		111/1	.05/LCC/
	Refer to Control Air Subsystem, Test, steps.		121/1	.10/LCC/
	ADJUST: Adjust pressure reducing valve to specified requirements.	Common Hand Tools	221/1	.10/LCC/
/3 Compressor Unit, Air	REPAIR: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Remove and replace following defective items as required:	4031 Truck, Mechanical Maintenance		
	Flow control valve.	Placard, Warning	121/1	.25/LCC/
	Check valve.		121/1	.25/LCC/
	Air unloader assembly.		121/1	.25/LCC/
	Air intake filter.		121/1	.10/LCC/
	CHECKOUT: Place circuit breaker in LCDA Panel to ON position and remove Warning Placard.		111/1	.05/LCC/
	Start compressor.		111/1	.05/LCC/
	Check for discharge pressure of approximately 50 psig.		111/1	.05/LCC/
/4 Compressor, Power Driven	REMOVE: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools	111/1	.05/LCC/
	Disconnect electrical wiring.	4031 Truck, Mechanical Maintenance	221/1	.10/LCC/
	Disconnect piping.	Placard, Warning	122/1	.10/LCC/
	Remove mounting hardware.		111/1	.10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP					
1212.3					
/2 Control Air Subsystem					
/3 Compressor Unit, Air					
'4 Compressor, Power Driven	INSTALL: Attach mounting hardware.		Common Hand Tools	211/1	.20/LCC/
	Connect piping and reconnect electrical wiring.			221/1	.20/LCC/
	Place circuit breaker in LCDA Panel to ON position and remove Warning Placard.			111/1	.05/LCC/
	CHECKOUT: Start compressor.			111/1	.05/LCC/
	Check for discharge pressure of approximately 50 psig.			111/1	.15/LCC/
/4 Starter, Motor	REPAIR: Place circuit breaker No. in LCDA Panel to OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Lantern, Electric Placard, Warning	111/1	.05/LCC/
	Remove and replace following defective items as required:				
	Overload heater. Place defective item on truck.	4031	Truck, Mechanical	221/1	.15/LCC/
	Place circuit breaker No. in LCDA Panel to ON position and remove Warning Placard.		Maintenance.	111/1	.05/LCC/
	CHECKOUT: Place motor starter in ON position and observe that compressor starts.			111/1	.05/LCC/
	REMOVE: Place circuit breaker No. in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.		Common Hand Tools Placard, Warning	111/1	.05/LCC/
	Remove mounting hardware and disconnect electrical wiring.		Lantern, Electric	221/1	.20/LCC/
	Remove defective motor starter.	4031	Truck, Mechanical	111/1	.05/LCC/
	Place defective item on truck.		Maintenance.	111/1	.05/LCC/
	INSTALL: Connect electrical wiring and install mounting hardware.		Common Hand Tools Lantern, Electric	221/1	.20/LCC/
	Place circuit breaker No. in LCDA Panel in ON position and remove Warning Placard.			111/1	.05/LCC/
	CHECKOUT: Place motor starter in ON position and observe that compressor starts.			111/1	.05/LCC/

SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3					
/2 Supply and Exhaust Air Subsystem	SERVICE: Lubricate the fan motors as required.		Common Hand Tools Kit, Lubrication	211/1	.15/LCC/6M
	TEST: Check for 208 VAC at S-1 fan motor terminals.	4001	Multimeter	221/1	.10/LCC/
	Check for 208 VAC at E-1 fan motor terminals.			221/1	.10/LCC/
	Check operation of modulating dampers.			221/1	.10/LCC/
	REPAIR: Place circuit breakers in OFF position and attach Warning Placard in conspicuous position.	4031	Truck, Mechanical Maintenance	111/1	.05/LCC/
	Remove and replace the following defective items as required:		Placard, Warning		
	Flexible duct.		Stepladder, 6-foot	111/1	.30/LCC/
	Damper operator.		Common Hand Tools	211/1	.55/LCC/
	Close circuit breaker and remove Warning Placard.			111/1	.05/LCC/
	Place defective item on truck.			111/1	.05/LCC/
	CHECKOUT: Check the following:				
	Supply and exhaust fans for operation.			221/1	.10/LCC/
	Modulating damper set for satisfactory positioning.			221/1	.20/LCC/
	Flexible duct for air tightness.			111/1	.05/LCC/
	ADJUST: Adjust linkage for proper positioning of damper.		Common Hand Tools	221/1	.20/LCC/
/3 Fan Supply, S-1 and Exhaust, E-1	REMOVE: Disconnect power to control panel and attach Warning Placard in conspicuous position.		Common Hand Tools	111/1	.05/LCC/
	Disconnect wiring.	4031	Truck, Mechanical Maintenance.	221/1	.10/LCC/
	Remove duct connecting hardware from flanged ends of fan		Placard, Warning	111/1	.20/LCC/
	Remove mounting hardware and defective fan.	0121	Truck, Hand Elevating Platform	111/1	.20/LCC/
	INSTALL: Attach mounting hardware.		Common Hand Tools	211/1	.20/LCC/
	Attach duct to flanged ends of fan with duct connecting hardware			211/1	.20/LCC/
	Connect wiring to fan motor.			211/1	.10/LCC/
	Connect wiring to control panel and remove Warning Placard.			211/1	.05/LCC/
	CHECKOUT: Check key operated manual switch in control panel for ON position.			111/1	.05/LCC/
	Check that fan operates.			111/1	.05/LCC/

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC SUB-C, LCC-SRCC, LCC-SRCC/ACP				
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP				
1212.3				
/2 Supply and Exhaust Air Subsystem				
/3 Damper Set, Modulating	**REPAIR:** Remove and replace defective pneumatic piston operator as required.	4031 Truck, Mechanical Maintenance	221/1	.40/LCC/
	Place defective item on truck.	Common Hand Tools	111/1	.05/LCC/
	CHECKOUT: Check the damper position when the chiller is operating		221/1	.20/LCC/
	ADJUST: Adjust damper linkage as required.	Common Hand Tools	221/1	.10/LCC/
/3 Panel, Control, Ventilation	**REPAIR:** Place circuit breakers for LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position.	Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning		
	Remove and replace following defective items as required:			
	Fuse.		221/1	.05/LCC/
	Circuit breaker.		221/1	.30/LCC/
	Control relay.		221/1	.30/LCC/
	Pneumatic electric relay.		221/1	.30/LCC/
	Temperature controller.		221/1	.30/LCC/
	Statis pressure regulator.		221/1	.30/LCC/
	Rectifier.		221/1	.30/LCC/
	Stepper switch.		221/1	.30/LCC/
	Time delay relay.		221/1	.30/LCC/
	Push button switch.		221/1	.30/LCC/
	Place circuit breakers for LCC-Sub C and LCC-SRCC and LCC-SRCC/ACP in LCDA Panel inON position and remove Warning Placard.		211/1	.05/LCC/
	Place defective item on truck.		111/1	.05/LCC/
	CHECKOUT: Check fuse and circuit breakers by observing that fans start.		221/1	.05/LCC/
	Check stepper, pneumatic electric relays and time delay relays by observing proper restart attempts and starting sequences.		221/1	.50/LCC/
	Check pneumatic controls by observing proper temperature control.		221/1	.50/LCC/

SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP **Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP** 1212.3 /2 Supply and Exhaust Air Subsystem /3 Panel, Control, Ventilation /4 Starter, Motor	**REPAIR:** Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace defective heater. Restore power and remove Warning Placard. Place defective item on truck. **CHECKOUT:** Check that fan operates with switches in ON position. **REMOVE:** Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring. Remove mounting hardware. Remove defective starter. Place defective item on truck. **INSTALL:** Replace defective starter. Replace mounting hardware. Connect wiring. Restore power and remove Warning Placard. **CHECKOUT:** Check that fan operates when switches are placed in ON position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Common Hand Tools 	111/1 221/1 111/1 111/1 211/1 211/1 221/1 111/1 111/1 111/1 111/1 111/1 221/1 211/1 221/1	.05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SYSTEM, LCSB Ventilation System, LCSB - 1390.3	**REPAIR:**	Common Hand Tools Placard, Warning Stepladder, 8-foot Ladder, Extension	111/1	20/LCC/Unk
	TEST:	Common Hand Tools Stepladder, 8-foot Ladder, Extension 4001 Multimeter Thermometer Set, Self-Indicating, Liquid in Glass Meter, Air Velocity	221/1	1.15/LCC/.07231
	REPAIR:	Common Hand Tools Placard, Warning Stepladder, 8-foot Ladder, Extension	211/1	.40/LCC/.00588
	CHECKOUT:	Ladder, Extension	221/1	.15/LCC/.00588

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM **Ventilation System (LCEB) - 1436.3**	**REPAIR:** **NOTE: NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE**			

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	REPAIR: Remove and replace following defective items as required. Safety relief valve. Gate valve. Refrigerant charging valve. Filter-drier. Solenoid valve Pressure gage isolating valve. Expansion valve. Isolating valve.	Common Hand Tools Receiver, Refrigerant 4316 Truck, Refrigeration System Servicing.	222/1	1.0/SB /.55
	Proceed as follows to repair items a thru e By means of a vacuum pump, evacuate refrigerant from receiver and the rest of system into water cooled refrigerant drum until pressure in brine chiller system is reduced to 1 psig.		222/1	.50/SB /.55
	Close nondefective valves in brine chiller.		111/1	.05/SB /.55
	Disconnect lines coupled to defective item. Cap disconnected lines if needed.		111/1	.20/SB /.55
	Remove mounting hardware and defective item.		111/1	.10/SB /.55
	Install replacement item and mounting hardware.		111/1	.20/SB /.55
	Open valves in brine chiller. Using vacuum pump evacuate system of air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury.		222/1	.50/SB /.55
	Fill system with refrigerant through a dryer in charging line.		222/1	.25/ SB /.55
	Start brine chiller, check for leaks at connections and purge as required.		221/1	.10, SB /.55
	Proceed as follows to repair items f thru h: Close receiver discharge valve.		222/1	.05/ SB /.55
	Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.		222/1	.50/ SB /.55
	Isolate defective item.			
	Remove mounting hardware and defective item.		221/1	.10/ SB /.55
	Open valves in brine chiller and, using a vacuum pump, evacuate system from air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury.		222/1	.50/ SB /.55
	Fill system with refrigerant through a dryer in charging line.		222/1	.25/ SB /.55
	Start brine chiller check for leaks at connections and purge it as required.		222/1	.10/ SB /.55

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	CHECKOUT: Connect unit to test bench and outside air ducts.	4560 Test Stand Brine Chiller	221/1	.20/ SB /
	Connect electric wiring to chiller unit for electric power supply.		221/1	.10/SB /
	Check that circuit breakers in panel are in ON positon.		111/1	.05/ SB /
	Place brine chiller key switch to ON position to start brine brine chiller.		111/1	.05/ SB /
	Observe brine pump flow rate for 26 gpm and brine temperature readings of 35 ± 5 deg F outlet when inlet is 41. 5±5 deg F.		211/1	.20/ SB /
	ADJUST: With brine chiller package unit connected to test bench and operating at maximum load, perform the following:			
	Regulate flow of brine as specified by adjusting plug valves on brine supply line.	Common Hand Tools	222/1	.10/ SB /

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Chiller	REMOVE: Close receiver discharge valve.		Common Hand Tools	111/1	.05/SB/
	Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.	4316	Drum 50-Gallon Truck, Refrigeration, System Servicing	221/1	.50/SB/
	Close receiver inlet valve and compressor suction and discharge.			111/1	.10/SB
	INSTALL: Tighten chiller mounting hardware.		Common Hand Tools	111/1	.15/SB
	Connect refrigerant and brine lines to chiller.	4316	Truck, Refrigeration	111/1	.15/SB
	Heat and evacuate chiller with a vacuum pump to 150 microns of mercury. Break vacuum with Freon 12 and reevacuate.		System Servicing	221/1	.30/SB
	Open refrigerant valves	3039	Leak Detector Refrigerant and Gas	111/1	.15/SB
	Check for leaks.			111/1	.30/SB
	SERVICE: Add refrigerant as needed through a dryer in charging line.	4316	Truck, Refrigeration System Servicing. Common Hand Tools	221/1	.30/SB
	CHECKOUT: Refer to Chiller Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a thru e.	4560	Test Stand, Brine Chiller	221/1	.60/SB
/4 Compressor, Reciprocating Power Driven CP-1	REMOVE: Close compressor inlet and discharge valve.		Common Hand Tools	221/1	.20/SB
	Disconnect electrical wiring from compressor.	4316	Truck, Refrigeration System Servicing.	221/1	.10/SB
	Bleed off pressure prior to disconnecting lines.			221/1	.20/SB
	Disconnect and cap refrigerant lines from compressor.			111/1	.10/SB
	Remove mounting hardware.			111/1	.10/SB
	INSTALL: Install compressor mounting hardware.		Common Hand Tools	111/1	.20/SB
	Connect refrigerant lines to compressor.			111/1	.05/SB
	Replace refrigerant dryer element.			111/1	.20/SB
	Connect electrical wiring to compressor motor.			221/1	.10/SB
	SERVICE: Heat and evacuate the compressor to about 150 microns.	4316	Truck, Refrigeration System Servicing	221/1	.30/SB
	Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line.			221/1	.10/SB
	Charge slightly above 0 psig. Repeat this step two times then open compressor inlet and discharge valves.			221/1	.10/SB
	Recharge system with Freon 12 through dryer. Fill compressor with moisture-free oil to proper level.			221/1	.30/SB
	CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a thru e.	4560	Test Stand, Brine Chiller	221/1	.60/SB

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Condensier, Refrigerating, Air	REMOVE: Close receiver discharge valve.	Common Hand Tools	111/1	.05/SB/
	Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.	4316 Stepladder, 6-Foot Truck, Refrigeration System Servicing.	221/1	.15/SB/
	Close receiver inlet valve and compressor suction and discharge valves.		111/1	.05/SB/
	Bleed off pressure prior to disconnecting lines.		222/1	.30/SB/
	Disconnect refrigerant lines to condenser.		111/1	.20/SB/
	Remove condenser mounting bolts.		111/1	.05/SB/
	INSTALL: Install mounting hardware.	Common Hand Tools	111/1	.05/SB/
	Connect suction and discharge lines to condenser unit.	Stepladder 6-Foot	111/1	.05/SB/
	Evacuate system to 150 microns of mercury. Break vacuum with Freon 12 and reevacuate.	3039 Leak Detector, Refrigerant Gas	222/1	.25/SB/
	Open receiver and compressor valves.	4316 Truck, Refrigeration System Servicing	111/1	.05/SB/
	Check for leaks.		111/1	.05/SB/
	SERVICE: Add refrigerant as required through dryer in charging line.	4316 Truck, Refrigeration System Service Common Hand Tools	221/1	.30/SB/
	CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a through e.	Test Stand, Brine Chiller	221/1	.60/SB/
/4 Receiver, Liquid Refrigerant	REMOVE: Evacuate refrigerant from system into temporary refrigerant receiver to 1 psig. Close valves on system receiver.	4316 Common Hand Tools Truck, Refrigeration System Servicing.	211/1	.25/SB/
	Bleed off pressure prior to disconnecting refrigerant lines.	Receiver, Refrigerant.	211/1	.05/SB/
	Disconnect system receiver refrigerant lines.		111/1	.20/SB/
	Cap off lines.		111/1	.10/SB/
	Remove mounting hardware.		111/1	.10/SB/
	INSTALL: Install mounting hardware.	Common Hand Tools	111/1	.10/SB/
	Uncap refrigerant lines and connect to receiver.		111/1	.15/SB/
	Open valves on lines to receiver.		111/1	.05/SB/
	SERVICE: Heat and evacuate the system.	4316 Truck, Refrigeration System Service	211/1	.50/SB/
	Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above 0 psig. Repeat this step two times.		211/1	.20/SB/
	Charge system with Freon 12 through a dryer in charging line.		211/1	.15/SB/
	CHECKOUT: Refer to Refrigerating Brine Chiller CH-1, Line 14, Checkout, Steps a through e.	4560 Test Stand, Brine Chiller	221/1	.60/SB/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /1 Chiller	REMOVE: Close receiver discharge valve.		Common Hand Tools	111/1	05/SB/.00537
	Pump refrigerant from system, to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.	4316	Drum, 50-Gallon Truck, Refrigeration System Servicing	221/1	50/SB/.00537
	Close receiver inlet valve and compressor suction and discharge valves.			111/1	10/SB/.00537
	Disconnect refrigerant lines on chiller.			111/1	05/SB/.00537
	Close brine valves and drain brine from chiller.			221/1	30/SB/.00537
	Disconnect brine lines from chiller.			111/1	05/SB/.00537
	Loosen mounting hardware.				
	INSTALL: Tighten chiller mounting hardware.		Common Hand Tools	111/1	15/SB/.00537
	Connect refrigerant and brine lines to chiller.	4316	Truck, Refrigeration	111/1	15/SB/.00537
	Evacuate chiller with vacuum pump to 150 microns of mercury.		System Servicing	221/1	30/SB/.00537
	Break vacuum with Freon 12 and re-evacuate.				
	SERVICE: Add refrigerant as needed through a dryer in charging lines.	4316	Truck, Refrigeration System Servicing	221/1	30/SB/.00537
	CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	4560	Test Stand, Brine Chiller	221/1	60/SB/.00537
/4 Compressor, Reciprocating	REMOVE: Close compressor inlet and discharge valve.		Common Hand Tools	221/1	20/SB/.09701
	Disconnect electrical wiring from compressor.	4316	Truck, Refrigeration	221/1	10/SB/.09701
	Bleed off pressure prior to disconnecting lines.		System Servicing	221/1	20/SB/.09701
	Disconnect and cap refrigerant lines from compressor.			111/1	10/SB/.09701
	Remove mounting hardware.			111/1	10/SB/.09701
	INSTALL: Install compressor mounting hardware.		Common Hand Tools	111/1	20/SB/.09701
	Connect refrigerant lines to compressor.			111/1	05/SB/.09701
	Replace refrigerant dryer element.			111/1	20/SB/.09701
	Connect electrical wiring to compressor motor.			221/1	10/SB/.09701

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP					
Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP					
1212.3					
/2 Brine Subsystem, Chilled					
/3 Chiller, Brine, Refrigerating					
/4 Compressor, Reciprocating	**SERVICE:** Heat and evacuate the compressor to 150 microns vacuum.	4316	Truck, Refrigeration System Service	221/1	.30/SB/.09701
	Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line.			221/1	.10/SB/.09701
	Charge slightly above 0psig. Repeat this step two times, then open compressor inlet and discharge valves.			221/1	.10/SB/.09701
	Fill compressor with moisture-free oil to proper level.			221/1	.30/SB/.09701
	CHECKOUT: *Refer to steps* in Chiller, Brine, Refrigerating, CH-1.	4560	Test Stand, Brine Chiller	221/1	.60/SB/.09701
/4 Condenser, Refrigerating, Air	**REMOVE:** Close receiver discharge valve.		Common Hand Tools	111/1	.05/SB/.00206
	Pump refrigerant from systems to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig.		Stepladder, 6-foot	221/1	.15/SB/.00206
		4316	Truck, Refrigeration System Servicing		
	Close receiver inlet valve and compressor suction and discharge valves.			111/1	.05/SB/.00206
	Bleed off pressure prior to disconnecting lines.			222/1	.30/SB/.00206
	Disconnect refrigerant lines to condenser.			111/1	.20/SB/.00206
	Remove condenser mounting hardware.			111/1	.05/SB/.00206
	INSTALL: Install mounting hardware.		Common Hand Tools	111/1	.05/SB/.00206
	Connect suction and discharge lines to condenser unit.		Stepladder, 6-foot.	111/1	.05/SB/.00206
	Evacuate system to 150 microns of mercury. Break vacuum with Freon 12 and re-evacuate.	3039	Leak Detector, Refrigerant Gas	221/1	.25/SB/.00206
	Open receiver and compressor valves.	4316	Truck, Refrigeration System Servicing	111/1	.05/SB/.00206
	Check for leaks.			111/1	.05/SB/.00206
	SERVICE: Add *refrigerant* as required through dryer in charging line.		Common Hand Tools	221/1	.30/SB/.00206
		4316	Truck, Refrigeration System Servicing		
	CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	4560	Test Stand, Brine Chiller	221/1	.60/SB/.00206

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED		SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212. 3 /2 Brine Subsystem, Chilled ·3 Chiller, Brine, Refrigerating /4 Receiver, Liquid Refrigerant	REMOVE: Evacuate refrigerant from system into temporary refrigerant receiver to 1 psig. Close valves on system receiver.	4316	Common Hand Tools Truck, Refrigeration System Service	211/1	.25/SB/.00002
	Bleed off pressure prior to disconnecting refrigerant lines.		Receiver, Refrigerant	211/1	.05/SB/.00002
	Disconnect system receiver refrigerant lines.			111/1	.20/SB/.00002
	Cap off lines.			111/1	.10/SB/ 00002
	Remove mounting hardware.			111/1	.10/SB/.00002
	INSTALL: Install mounting hardware.		Common Hand Tools	111/1	.10/SB/.00002
	Uncap refrigerant lines and connect to receiver.			111/1	.15/SB/.00002
	Open valves on lines to receiver.			111/1	.05/SB/.00002
	SERVICE: Evacuate the system.	4316	Truck, Refrigeration System Service	211/1	.50/SB/.00002
	Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above 0 psig. Repeat this step two times.			211/1	.20/SB/.00002
	Charge system with Freon 12 through a dryer in charging line.			211/1	.15/SB/.00002
	CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	4560	Test Stand, Brine Chiller	221/1	.60/SB/.00002

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Control, Heater	REPAIR: Remove and replace following defective items as required: Piston operator and positioner.	Common Hand Tools	211/1	.40/SB/
	CHECKOUT: Check piston operator actuates variac on air pressure.		211/1	.20/SB/
	ADJUST: Adjust linkage for minimum and maximum position.	Common Hand Tools	211/1	.10/SB/
/5 Heater Control, Variac	REMOVE: Disconnect electrical wiring.	Common Hand Tools	221/1	.05/SB/
	Remove mounting hardware and defective heater control.		111/1	.10/SB/
	INSTALL: Install replacement heater control and mounting hardware.	Common Hand Tools	221/1	.10/SB/
	Reconnect electrical wiring.		221/1	.05/SB/
	CHECKOUT: Check heater control for electrical continuity.	4001 Multimeter	221/1	.40/SB/
	ADJUST: Adjust linkage and check variac heater control cursor setting.		221/1	.20/SB/